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Status of Atlantic Salmon (*Salmo salar* L.) in Indian Bay Brook, Middle Brook, and Terra Nova River (SFA 5), Northeast Brook, Trepassey (SFA 9), and Northeast River, Placentia (SFA 10), Newfoundland, in 1999

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Abstract

The status of Atlantic salmon stocks in 1998 was determined for Indian Bay Brook, Middle Brook, and Terra Nova River in Salmon Fishing Area (SFA 5), Northeast Brook, Trepassey in SFA 9, and Northeast River, Placentia in SFA 10. Total returns of small salmon to Indian Bay Brook and Middle Brook in 1999 decreased from 1998 (17 and 23%) while Terra Nova River showed a slight increase (9%). Returns of small salmon to Northeast Brook, Trepassey were similar to 1998 while Northeast River, Placentia declined (59%) to the lowest level of the commercial salmon fishing moratorium period. Total returns of large salmon to Indian Bay Brook in 1999 increased by 9% over 1998, but decreases were noted for Middle Brook and Terra Nova River (34 and 12%). Northeast Brook, Trepassey showed an increase in large salmon returns in 1999 over 1988 (64%), but returns to Northeast River Placentia decreased (42%). Conservation egg requirement was achieved in all rivers except Terra Nova River. It should be noted that accessible rearing habitat above the lower Terra Nova River fishway more than doubled with the opening of the area above Mollyguajeck Falls in 1985. Smolt-to-adult survival for small salmon (repeat spawners included) for Northeast Brook, Trepassey in 1999 (adult year) was 5.5%, a slight improvement over the 5.0% observed in 1998, and low compared with the record high of 9.2% in 1996. The survival value for 1997 (2.9%) was the lowest of the moratorium years and the second lowest of the entire time series. Survival in terms of virgin grilse in 1999 was 5.0%. Egg-to-smolt survival for the 1994 spawning year-class was 0.40 (preliminary), a substantial decline from the high recorded for the 1992 year-class (1.09%), and more in line with values observed prior to 1992. Estimates of total river returns of small salmon to Indian Bay Brook in 1997-99, derived using angling data and the index river method, were three to four times higher than actual returns. Angling data were of some value with respect to indication of the overall direction of trends in abundance.

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Résumé

L'état des stocks de saumon atlantique, en 1998, a été déterminé pour les cours d'eau suivants : Indian Bay Brook, Middle Brook et la rivière Terra Nova, dans le secteur de pêche du saumon (SPS 5); Northeast Brook (baie Trepassey), dans le SPS 9; la rivière Northeast (baie Placentia), dans le SPS 10. Les remontes de petits saumons vers l'Indian Bay Brook et le Middle Brook ont diminué en 1999 par rapport à 1998 (de 17 et de 23 % respectivement), tandis qu'elles ont légèrement augmenté vers la rivière Terra Nova (de 9 %). Les remontes de petits saumons vers le Northeast Brook (Trepassey) sont semblables à celles de 1998, tandis que, vers la rivière Northeast (Placentia), elles ont diminué de 59 % pour atteindre le niveau le plus bas depuis le moratoire sur la pêche commerciale du saumon. Les remontes de gros saumons vers le Indian Bay Brook ont augmenté de 9 % en 1999 par rapport à celles de 1998, mais elles ont diminué vers le Middle Brook et la rivière Terra Nova (de 34 et de 12 %). Comparativement à 1988, elles ont augmenté de 64 %, en 1999, vers le Northeast Brook (Trepassey) et diminué de 42 % vers la rivière Northeast (Placentia). Le critère de conservation des œufs a été respecté dans tous les cours d'eau, sauf dans la rivière Terra Nova. Il faut souligner que l'habitat de grossissement accessible, situé en amont du passage du poisson de la rivière Terra Nova, a plus que doublé depuis qu'on a créé la zone située en amont des chutes Mollyguajeck en 1985. Le taux de survie des saumons entre le stade de saumoneau et celui de la remonte des adultes a, dans le cas du petit saumon (comprenant les saumons à pontes antérieures) atteint 5,5 % en 1999 pour le Northeast Brook (Trepassey), ce qui représente un légère amélioration par rapport aux 5 % de 1998, mais demeure faible par rapport au record de 9,2 % atteint en 1996. Le taux de survie en 1997 (2,9 %) a été le plus faible de toutes les années du moratoire, et le deuxième parmi les plus faibles de l'ensemble des séries chronologiques. En 1999, la survie des castillons jusqu'à la fraie a été de 5 %. Le taux de survie jusqu'au stade de saumoneau de la classe d'âge de frai de 1994 a été de 0,4 % (donnée préliminaire), ce qui représente une diminution sensible par rapport au taux record de la classe d'âge de frai de 1992 (1,09 %), tout en étant de l'ordre des taux observés pour les années antérieures à 1992. L'estimation des remontes totales de petits saumons vers le Indian Bay Brook, pendant la période 1997-1999, tirée des données de la pêche à la ligne et calculée par la méthode des rivières-repères, donne des chiffres trois à quatre fois plus élevés que ceux des remontes réelles. Les données de la pêche à la ligne ont une certaine valeur dans la mesure où elles indiquent les tendances d'abondance générales.

Introduction

In this paper, we examine the status of Atlantic salmon in Indian Bay Brook, Middle Brook, and Terra Nova River, Bonavista Bay (Salmon Fishing Area (SFA)) 5, Northeast Brook, Trepassey, St. Mary's Bay (SFA 9), and Northeast River, Placentia Bay (SFA 10) in 1999, the eighth year of the commercial salmon fishery moratorium. The location of each river is shown in Figs. 1-5.

Counts of small and large salmon are used in conjunction with recreational fishery data and biological characteristics data to calculate total river returns and egg depositions. Stock status is evaluated relative to conservation egg requirements for all rivers. Also presented in this document is information on egg-to-smolt survival and smolt-to-adult (sea) survival for Northeast Brook, Trepassey and water temperature and water level data for all rivers.

Management Measures, Past and Present

The introduction of the commercial Atlantic salmon fishery moratorium in insular Newfoundland in 1992 followed a major management plan introduced in 1984 (O'Connell *et al.* 1992a; May 1993), which was modified in 1990 and 1991 to include a commercial fishery quota in each SFA (O'Connell *et al.* MS 1992b). Elements of this management regime continued into the moratorium years. The moratorium placed on the Northern Cod Fishery in 1992, which should have eliminated by-catch in cod fishing gear in SFAs 1-9, was interrupted in 1999 with a limited commercial fishery (total allowable catch of 9000 t) (Anon 1999a). There was a small inshore index cod fishery in this area in September-October in 1998, which is mainly outside the migration period of June-early September for most Atlantic salmon destined for insular Newfoundland rivers. A moratorium was placed on cod fishing in SFAs 10-14A in August 1993. In 1997, the cod fishery in SFAs 10 and 11 opened for the first time since 1993 with a TAC of 10000 t; the quota was increased to 20000 t in 1998 and to 30000 t in 1999. This fishery opened in April/May and continued through the summer into autumn and winter. Collectively, these cod fisheries were prosecuted mainly with fixed gear (gillnets), hand line, and long line and did not involve the use of cod traps, which traditionally accounted for the major portion of Atlantic salmon by-catch.

A quota on the number of fish that could be retained in the Atlantic salmon recreational fishery was introduced in each SFA in 1992 and 1993. The quota was assigned for each SFA as a whole as opposed to individual river quotas. Only hook-and-release fishing was permitted after the quota was caught. Recreational fishery quotas were eliminated in 1994. In place of quotas, for insular Newfoundland, the season bag limit for retained small salmon was lowered from eight to six fish, three to be caught prior to July 31 and three after that date. Hook-and-release fishing only was permitted after the bag limit of three was reached in each time period. These measures remained in effect in 1995-97. Returns of small salmon to many rivers in insular Newfoundland in 1997 were substantially lower than expected (Dempson *et al.* MS 1998; O'Connell *et al.* MS 1998a). As a result of this and uncertainties regarding levels of future returns, the management plan for 1998 was much more conservative than for previous years. The season bag limit for the retention of small salmon in 1998 was reduced to one, pending the results of an in-season review.

As a result of the findings of the in-season review, anglers were allowed to additionally retain three small salmon from July 4 until the end of the angling season. Beginning on July 8, 1998, only the use of barbless hooks was permitted. As in previous years, retention of large salmon was not permitted in insular Newfoundland in 1999.

A three-year management plan was implemented in 1999, a significant component of which was the introduction of a River Classification System for insular Newfoundland, used to develop retention levels based on the health of individual stocks, without jeopardising conservation goals. This was a major departure from previous years when stocks were managed on a global basis. Details of the three-year plan are provided in Anon. (1999b). Under this classification system, Indian Bay Brook, Middle Brook, and Northeast River, Placentia are designated as Class II and Terra Nova River as Class III. Northeast Brook, Trepassey has been closed to angling since 1984 in conjunction with ongoing research activity. Rivers in Class II fit the following criteria: are smaller to medium size rivers where conservation requirements have been met on average since 1992 (the first year of the commercial salmon fishing moratorium; are rivers that support medium size populations of Atlantic salmon; main stems are subject to fluctuations in environmental conditions such as low water levels and high water temperatures and hence protocols regulating angling closures for environmental reasons apply; are in remote locations with low angling effort; have stable and high catch rates based on historical data. The retention limit for small salmon for Class II rivers is four fish, without the July 31 season split. Class III rivers are defined as follows: smaller to medium size rivers where conservation requirements have not been met on average since 1992; rivers where special management measures have been implemented to increase the overall spawning population; rivers subject to the same environmental protocols for opening and closure of angling as for Class II rivers; rivers with small populations of Atlantic salmon and/or are in close proximity to highly-populated areas. The retention limit for small salmon for Class III rivers is set at two fish, without the July 31 season split. The daily hook-and-release limit for both Class II and Class III rivers is four fish. Part of Terra Nova River (see below) was classified as Class IV in 1999. This class refers to: small to medium size rivers where conservation requirements have not been met in any year since 1992; rivers where special management measures have been implemented to increase spawning escapements; rivers that were subject to hook-and-release only, in 1998; rivers or sections of rivers that have been subject to enhancement activities. Hook-and-release fishing only is permitted in Class IV rivers and the daily limit is two fish.

Special management measurements were in effect for Terra Nova River in 1999. The section of the river from a point 25 metres below the upper fishway up to Terra Nova Lake dam was closed to all angling for the season. The following sections were rated as Class IV: Morine's Pool, from a point 25 metres below The Bench up to a point 100 metres above The Bench; the section from a point 25 metres above Island Pool up to a point 25 metres below Briffett's/Second Steady; the section from a point 25 metres below the upper fishway downstream to a point 800 metres below the upper fishway; all of the watershed above Terra Nova Lake dam, including the main stem.

Atlantic Salmon Enhancement - Terra Nova River

Terra Nova River has undergone Atlantic salmon enhancement programs since the early 1950s. A fishway was built around impassable falls located approximately 22 km from the mouth of the river in 1952 (Porter *et al.* 1974). This structure (upper fishway) provided access for anadromous Atlantic salmon upstream as far as the complete obstruction at Mollyguajeck Falls. Colonization of the newly accessible area depended on adults straying from below the fishway. A fishway (lower) was built around falls located approximately 8 km from the mouth of the river in 1954 in order to facilitate the upstream movement of adults. Anadromous Atlantic salmon were introduced into the area above Mollyguajeck Falls (Fig. 3) in 1985-89. Adults were collected from the upper fishway and transferred above the falls by helicopter. In order to allow the progeny of these transferred fish to access their natal areas, passage through Mollyguajeck Falls was made possible by blasting pools in the river bed in 1985. A swim-up fry stocking program utilizing broodstock from the upper fishway was initiated above Mollyguajeck Falls in 1994 and continued in 1999.

The falls in Middle Brook and Northeast River, Placentia, were not complete obstructions and only impeded adult migration during low water conditions. The fishways for these rivers were installed to ease passage during low flows, similar to the situation for the lower Terra Nova River fishway.

Methods

Recreational fishery data and counts of adult salmon in 1999 were compared to two pre-salmon moratorium means (1984-89 and 1986-91). The 1984-89 mean corresponds to years under the major management changes in the commercial fishery in the Newfoundland Region, cited above. The 1986-91 mean incorporates the quota years of 1990 and 1991. The mix of management measures in effect during 1984-89 on the one hand and the imposition of commercial quotas in 1990 and 1991 on the other, should be kept in mind when making evaluations based on the 1986-91 mean. Recreational fishery data in 1999 were also compared to the moratorium mean for 1992-96 (see discussion of the License Stub Return System below) while counts of adult salmon were compared to the mean for 1992-98.

Adult salmon and smolt counting equipment

Adult salmon were counted in traps installed in the fishways located in Middle Brook, lower Terra Nova River, and Northeast River, Placentia. Adult counts in Indian Bay Brook were obtained with the semi-automatic (video tape recording) salmonid Silhouette Imaging and Counting System (Pippy *et al.* 1997) installed in a counting fence. The tunnel for this system was installed in the streambed immediately outside of and continuous with the upstream fish release gate of a conventional wooden adult trap. Smolt and adult counts were obtained in Northeast Brook, Trepassey with a counting fence and a convertible steel smolt-adult trap (Whelan *et al.* 1989).

Recreational fishery data

Prior to 1997, catch and effort data for each river were collected by Department of Fisheries and Oceans (DFO) River Guardians and processed by DFO Science Branch staff, according to procedures outlined in Ash and O'Connell (1987). Rivers with counting facilities had information separated above and below the counting facilities. Angling data for Middle Brook in 1997 (collected above and below the fishway) were obtained through a creel survey (O'Connell *et al.* MS 1998b). Data for 1997-99 for all rivers (except Middle Brook in 1997) were derived from the License Stub Return System (see O'Connell *et al.* MS 1998b for a description of the methodology). Data for 1999 are preliminary at this stage. It was not possible to apportion information above and below counting facilities with the License Stub Return. This was accomplished for Terra Nova River (lower fishway) and Northeast River, Placentia, in 1997 by applying the proportion for above and below for the period 1993-96 to the License Stub Return estimate for the entire river. In 1998 and 1999, angling data below counting facilities for Middle Brook, Terra Nova River, and Northeast River, Placentia, were provided by River Guardians. Since 1997 and 1998 were the only years for the counting fence in Indian Bay Brook, there was no previous information for above and below the fence. Personnel operating the counting fence estimated that approximately 20% of the number of small salmon retained came from below, which was applied to the 1997 and 1998 License Stub Return estimates for the entire system. Angling data for below the counting fence were provided by River Guardians in 1999.

The License Stub Return System for collecting recreational fishery data represents a complete departure from the previous DFO River Guardian method. Details of a comparison of stub data, with DFO River Guardian data for insular Newfoundland rivers for 1994-96, are provided in O'Connell *et al.* (MS 1998b). Overall, estimates of released small and large salmon from the stub were substantially higher than estimates from River Guardians while the two methods were closer with respect to estimates of small salmon retained. This has to be kept in mind when comparing catches in 1997-99 with previous years. There is evidence that effort expenditure was under-reported by the stub method and hence this information will not be used in the present document. Analyses are currently being carried out to adjust for under-reporting. Effort data were available for Middle Brook from the creel survey in 1997.

Data for Maccles Brook were included in the totals for Terra Nova River. Angling data for 1987 were not included in the means because in that year the rivers were closed to angling for nearly the entire season due to drought conditions.

Biological characteristics

Biological characteristics information (obtained by sampling recreational catches) used to calculate egg depositions for small salmon (< 63 cm in length) is shown in Tables 1-5. Since there was no recreational fishery in Northeast Brook, Trepassey, there was no information available on bright (upstream migrating) adult salmon, in year (i). Bright adults were not sampled at the trap because of the small run size involved and the risk of mortality, which might have compromised ongoing research on egg-to-smolt survival. Therefore, kelts were sampled in year (i + 1), and mean fork length (cm) was used in the calculation of egg deposition in year (i)

A mean weight of 3.13 kg and a proportion of female value of 0.77 (O'Connell *et al.* MS 1997a) was used for fish ≥ 63 cm in length (large salmon) for all years and for all rivers except Northeast Brook, Trepassey. Mean length and proportion of female from a blended sample of small and large kelts were used for this system.

Fecundity was determined from ovaries collected in the recreational fishery. Ovaries were stored in Gilson's fluid until ovarian tissue had broken down, after which time eggs were transferred to 10% formalin. Eggs, which for the most part were in early stages of development, were counted directly. Relative fecundity values used for all rivers except Indian Bay Brook and Northeast Brook, Trepassey are shown in Table 6. The value used for Indian Bay Brook was that presented in Table 5 for years combined for Middle Brook (1980 eggs/kg). For Northeast Brook, Trepassey, the relative fecundity value (65.6 eggs/cm) used was that for all years combined for nearby Biscay Bay River, from O'Connell *et al.* (MS 1997b). In years when the sample size was small ($N < 20$), the mean fecundity for all years combined for a given river was used. The same relative fecundity was used for both small and large salmon.

Biological characteristics of smolts for Northeast Brook, Trepassey were obtained by sampling throughout the run during counting operations each year.

Condition was examined using Fulton's condition factor (K) as follows:

$$K = W \times C / L^3 \qquad (1)$$

where,

W = weight (gm for smolts; kg for adults)
C = 100 (for smolts); 100000 (for adults)
F = fork length (cm)

Total river returns, spawning escapement, and egg deposition

Calculations were performed for small and large salmon separately, except in the case of Northeast Brook, Trepassey, where small and large salmon were combined. Total egg deposition was obtained by summing depositions for small and large salmon for rivers other than Northeast Brook, Trepassey.

Total River Returns

Total river returns (TRR) were calculated as follows:

$$TRR = RC_b + C + HRM_b \qquad (2)$$

where,

RC_b = recreational catch below counting facility
C = count of fish at counting facility
HRM_b = hook-and-release mortalities (10% of hook-and-release fish) below counting facility

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C = count of fish at counting facility
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For Terra Nova River, recreational catch below the fishway did not include that of Maccles Brook.

Spawning Escapement

Spawning escapement (SE) was calculated according to the formula:

$$SE = TRR - RC_t - BR - HRM_t \quad (3)$$

where,

RC_t = total recreational catch
BR = broodstock removal (Terra Nova River in 1994-99 and Northeast River, Placentia, 1997-99)
HRM_t = total hook-and-release mortalities (10% of hook-and-release fish)

A number of mortalities of small salmon occurred in Northeast River, Placentia (49) and Middle Brook (16) subsequent to being counted in 1996 which were deducted from TRR in equation 3. These mortalities resulted from unusually high flood conditions in Northeast River, Placentia and from modifications to the trap configuration in Middle Brook.

Egg Deposition

Egg deposition (ED) was calculated as follows:

$$ED = SE \times PF \times RF \times MW \quad (4)$$

where,

SE = number of spawners
PF = proportion of females
RF = relative fecundity (no. of eggs/kg)
MW = mean weight of females

For Northeast Brook, Trepassey, as pointed out above, RF was in terms of number of eggs per cm and mean length of females was used instead of mean weight (MW). For Terra Nova River, spawning escapements and egg depositions were calculated for the area above the lower fishway, including the area above Mollyguajeck Falls.

The phenomenon of atresia occurs in Atlantic salmon in insular Newfoundland (O'Connell and Dempson MS 1997). Since egg deposition calculations above were based on eggs in early stages of development, they should be regarded as potential egg depositions.

Comparison of the index river method of calculation of total river returns with results from a counting fence, Indian Bay Brook

In previous assessments (O'Connell *et al.* MS 1999), for the period 1984-96, i.e., prior to the counting fence, TRR for small salmon for Indian Bay Brook was estimated as the ratio of total retained recreational catch (RC_i) and an annual exploitation rate (μ_i) derived by Porter *et al.* (1996)

$$TRR = RC_i/\mu_i \qquad (5)$$

A base exploitation rate (0.20) for Indian Bay Brook was adjusted each year according to the change in the base rate derived for Middle Brook (0.38), which served as an index river.

Estimates of TRR derived from the methodology of Porter *et al.* (1996) were compared to results obtained from counts and angling data using equation 2 above.

Conservation egg deposition and spawner requirements

The conservation egg deposition and spawner requirements for each river were developed by O'Connell and Dempson (MS 1991a,b) (Table 7). Requirements for Northeast Brook, Trepassey were modified from those presented in O'Connell and Dempson (MS 1991b) based on a more recent survey of available parr rearing habitat. The egg requirement for fluvial parr rearing habitat (Elson 1957) for all rivers was 240 eggs/100 m² (Elson 1975); the requirement for lacustrine habitat was 368 eggs/ha (O'Connell and Dempson 1995). The adult conservation requirement for each river was calculated in terms of small salmon only. Egg deposition from large salmon was considered as a buffer.

Net marks

In 1997-99, adult salmon entering the fishways in Middle Brook and lower Terra Nova River were examined for the incidence of net marks.

Environmental data

Water temperatures were measured at each counting facility with a Ryan TempMentor digital thermograph (in 1984-90) and a Hugrun Seamon digital thermograph (in 1991-99). Water levels were measured near each counting facility each year over a permanent benchmark installed in the river.

Results

Recreational fishery

Catch and effort data for each river are presented in Appendices 1-4. Catches for all years prior to 1992 represent retained catch for the entire angling season. Total catch for 1999 (retained plus released fish) is compared to years prior to 1992 and 1992-96 (1997 and 1998 data

were derived from the License Stub Return System, as seen above, and hence were not included in the means). There was no estimate of released fish during the period of retention of catch in 1992, which could impact on comparisons. The total number of fish retained in 1999 is also shown. Calculation of CPUE in terms of retained fish only was not possible since effort figures apply to both retained and released fish collectively. For reasons pointed out above, effort and CPUE information were not available for 1997-99 (except for Middle Brook in 1997).

SFA 5

The total catch of small salmon (retained plus released fish) in 1999 in Indian Bay Brook decreased from 1998 (38%) and the 1992-96 mean (56%). Numbers of small salmon retained in 1999 decreased also (17 and 52%). The number of large salmon released was the second highest recorded.

The total catch of small salmon in 1999 for Middle Brook decreased from 1998 (48%) and the 1992-96 mean (63%) as did the number of small salmon retained (25 and 59%). The number of large salmon released was the third highest recorded.

For Terra Nova River, the total catch of small salmon in 1999 was the lowest on record as was the number of small salmon retained. The number of large salmon released decreased from 1998 (69%) and the 1992-96 mean (83%).

SFA 10

The total catch of small salmon in Northeast River, Placentia in 1999 decreased from 1998 (77%) and the 1992-96 mean (59%) as did the number of small salmon retained (74 and 57%). The number of large salmon released decreased from 1998 (65%).

Biological characteristics of adults

For Middle Brook (Table 2) and Terra Nova River (Table 3), the percentage of repeat spawning grilse in the small salmon component was lower during the moratorium years than during pre-moratorium years, being most pronounced for the latter river. There was a slight increase in the incidence of repeat spawners during the moratorium years over pre-moratorium years for Northeast Brook, Trepassey (Table 4) while Northeast River, Placentia showed a marked increase (Table 5). The incidence of repeat spawners in 1999 for Indian Bay Brook (Table 1) was the second highest of the limited data series available. Mean fork length and mean weight were higher for the moratorium period than for the pre-moratorium period for all rivers. Percent female during the moratorium years increased over pre-moratorium years for Terra Nova River and Northeast Brook, Trepassey but remained the same for Middle Brook and Northeast River, Placentia.

Mean fork length, mean weight, mean smolt age and mean condition factor for virgin grilse during the moratorium period for Middle Brook, Terra Nova River, and Northeast River, Placentia are presented in Figs. 6-8, respectively. In the context of the entire time series, values for these parameters in 1999 for Middle Brook and Northeast River, Placentia were not unusual.

The same observation was more or less true for Terra Nova River, up to 1997.

Modal smolt age as determined from virgin grilse for Middle Brook was 3+ years during 1992-94 but in 1995-99 it increased to 4+ years (Fig. 9). A mode of 3+ years for 1992-94 gave way to 4+ years for 1995-97 for Terra Nova River (Fig. 10). Except for 1993 when the percent composition for the 3+ and 4+ age groups was the same, modal smolt age for Northeast River, Placentia was consistently 3+ years.

Counts of adults

SFA 5

Counts of small and large salmon for the Indian Bay Brook counting fence in 1997-99 are shown in Table 8. The count of small salmon in 1999 decreased by 16% from that of 1998 while the count of large salmon was the highest of the three years. The peak count of small salmon occurred around the end of June compared to around the end of the third week of that month in 1998 (Fig. 12). The highest daily count of large salmon in 1999 occurred in the second week of July compared to the third week of July in 1998 (Fig. 12). The median date of return of small salmon in 1999 occurred in early July, a few days later than in 1998; the median for large salmon occurred around July 10, approximately a week earlier than in 1998 (Fig. 13). In 1998, there was a minor peak for large salmon in the third week of June.

Counts of small and large salmon for the Middle Brook fishway are shown in Table 8. The count of small salmon in 1999 decreased by 25% from 1998, in which year the second highest count on record occurred, but remained above the means (97, 139, and 13%, respectively). The count of large salmon decreased from 1998 (34%) and the 1992-98 mean (10%) but increased over the 1984-89 (417%) and 1986-91 (730%) means. The daily count of small salmon peaked in the first week of July in 1999 and that of large salmon a few days later (Fig. 14). This compares to around the end of June in 1998 for small salmon, the earliest of the moratorium years, and to late July for large salmon. The median date of return of small salmon in 1999 occurred in the second week of July, and that of large salmon a few days later (Fig. 15). The median for small salmon was the second earliest of the moratorium years; for large salmon, it was among the earliest.

Counts of small and large salmon for the lower Terra Nova River fishway are presented in Table 8. The number of small salmon counted in 1999 increased slightly over that of 1998 (3%), showed a more substantial increase over the 1984-89 (43%) and 1986-91 (59%) means, but decreased slightly from the 1992-98 mean (4%). The count of large salmon in 1999 decreased from 1998 (12%) and the 1992-98 mean (20%) but increased over the 1984-89 (170%) and 1986-91 (157%) means. The highest daily count of small salmon in 1999 occurred in mid-July as did that of large salmon (Fig. 16). Median counts of both size components also occurred in mid-July (Fig. 17). The median count for small salmon in 1999 was the second earliest of the moratorium years (the highest occurred in 1998) while that of large salmon was the earliest

SFA 9

Counts of small and large salmon for the Northeast Brook, Trepassey counting fence are shown in Table 9. The count of small salmon in 1999 (the second highest of the moratorium years) increased slightly over 1998 (4%), decreased slightly from the 1984-89 (8%) and 1986-91 (1%) means, but increased over the 1992-98 mean (28%). The count of large salmon (the highest of the moratorium years) increased over 1998 (64%) and the 1992-98 mean (42%), but decreased from the 1984-89 (37%) and 1986-91 (9%) means. Daily counts of small and large salmon and dates of median counts are shown in Figs. 18 and 19. The median count of small salmon in 1999 occurred in the second week of July, the second earliest of the moratorium years (the earliest occurred in 1998). The median for large salmon was encountered in the fourth week of July and was the second earliest of the moratorium years (as for small salmon, the earliest was in 1998).

SFA 10

Counts of small and large salmon for the Northeast River, Placentia fishway are shown in Table 9. The count of small salmon in 1999 was the lowest of the moratorium years, decreasing from 1998 and all means (56, 35, 37, and 59%, respectively). The count of large salmon decreased from 1998 (42%) but increased over the means (702, 779, and 38%, respectively); the highest large salmon count on record occurred in 1998. The peak daily count of small salmon occurred around mid-July in 1999 while that of large salmon was in late June (Fig. 20). There were no markedly distinct peaks for either size component in 1999. The median count for small salmon occurred in early July and that of large salmon a few days later, the earliest of the moratorium years for both components (Fig. 21).

Total river returns, spawning escapement, and percentage of conservation requirement achieved

SFA 5

Total river returns, spawning escapement, potential egg deposition, and percentage of conservation requirement achieved for Indian Bay Brook, Middle Brook, and Terra Nova River are shown in Table 10. Total river returns and percentage of conservation egg requirements achieved are also shown in Figs. 22 and 24.

The number of small salmon returning to the Indian Bay Brook counting fence in 1999 decreased from that of 1998 by 17% while the number of large salmon increased by 9%. Conservation egg requirement was achieved in all three years of available data with the level for 1999 being the second highest. Spawning requirement in terms of small salmon was only achieved in 1998.

Total returns of small salmon to Middle Brook in 1999 decreased from 1998 (23%) but remained above the means (56, 83, and 5%, respectively). Total returns of large salmon decreased from 1998 (34%) and the 1992-98 mean (10%), but were higher than the means for 1984-89 (417%) and 1986-91 (730%). Conservation requirements in terms of both eggs and small salmon were achieved in all moratorium years in Middle Brook (the highest percentage

achieved occurred in 1998) but in only one year (1984) prior to the moratorium.

The number of small salmon returning to Terra Nova River in 1999 increased slightly over 1998 (8%) and was above the means for 1984-89 (18%) and 1986-91 (30%), but decreased from the 1992-98 mean (13%). Total returns of large salmon decreased from 1998 (12%) and the 1992-98 mean (20%), but remained above the 1984-89 (170%) and 1986-91 (157%) means. The percentages of conservation egg requirement met during the moratorium years for Terra Nova River were generally higher than during pre-moratorium years, with record highs being recorded during the moratorium. The percentage of conservation egg requirement met in 1999 increased slightly over that of 1998. The percentage of small salmon conservation requirement met in 1999 improved over 1998 which in turn increased over the low for the moratorium period recorded in 1997.

SFA 9

Total river returns, spawning escapement, potential egg deposition, and percentage of conservation egg requirement achieved for Northeast Brook, Trepassey are shown in Table 11. Total river returns and percentage of conservation egg requirement achieved are also shown in Figs. 23 and 24.

Total returns of small and large salmon in 1999 are equivalent to counts at the counting fence (no angling in this system), which have been dealt with previously. Conservation requirements in terms of both eggs and small salmon were achieved in 1999 and in all years (or nearly so in terms of small salmon) of the time series.

SFA 10

Total river returns, spawning escapement, potential egg deposition, and percentage of conservation egg requirement achieved for Northeast River, Placentia are shown in Table 11. Total river returns and percentage of conservation egg requirement achieved are also shown in Figs. 23 and 24. Total returns of small salmon in 1999 were the lowest of the moratorium years, decreasing from 1998 and the means (59, 40, 42, and 61%, respectively). Returns of large salmon decreased from 1998 but remained above the means (702, 779, and 38%, respectively). Conservation requirements in terms of both eggs and small salmon were achieved in 1998 and all years of the time series.

Comparison of the index river method of calculation of total river returns with results from a counting fence, Indian Bay Brook

There was a significant positive relationship between Middle Brook and Indian Bay Brook for the period 1974-96 with respect to numbers of salmon retained in the recreational fishery but the relationship for CPUE was not significant ($P>0.05$) (Fig. 25). Numbers of small salmon retained in Indian Bay Brook and Middle Brook were significantly and positively related to total returns of small salmon to Middle Brook during 1984-96 (Fig. 26); although both regressions displayed a fair amount of scatter, the one for Middle Brook itself was barely significant. There was also a significant positive relationship between CPUE in Indian Bay

Brook and total returns of small salmon to Middle Brook (Fig. 26). However, the relationship between CPUE and total returns of small salmon for Middle Brook itself (Fig. 26) was not significant ($P>0.05$).

It is evident from Table 12 that the index river method substantially underestimated exploitation rates compared to actual rates for the period 1997-99 in Indian Bay Brook. Total returns of small salmon estimated by the index river method were three to four times higher than the actual.

Smolt counts and biology, Northeast Brook, Trepassey

The number of smolts counted in Northeast Brook, Trepassey in 1999 decreased from 1998 (18%) and was the lowest since 1996 (Table 13). Median run timing (day of the year) for 1999 was average; timing for 1998 was one of the earliest recorded (Fig. 27).

Information on fork length (cm), whole weight (gm), age (yr), and condition for smolts for the years 1985-99 is shown in Fig. 28. Although there was some annual variation in the means of these parameters over the years, with the possible exception of mean smolt age (which increased to the highest level on record in 1999), there is no evidence of trends. There was greater annual variation in range of size and condition. Modal smolt age was 4+ years for all years except 1985, 1990, and 1996, when the mode was 3+ years (Fig. 29). There was a substantial increase in the proportion of 5+ smolts in 1999, the highest on record.

Smolt-to-adult survival, Northeast Brook, Trepassey

Smolt-to-adult survival (including repeat spawners) for 1999 (adult year) increased slightly (9%) over that observed in 1998 (Table 13 and Fig. 30). The value for 1997 was the second lowest on record, only slightly better than the low observed in 1992 and well below the record high of 9.2% in 1996. Survivals during the moratorium years were either comparable to or only slightly higher than those observed prior to the moratorium. In terms of virgin grilse, survival in 1999 increased by 4% over that of 1998 (Fig. 30). It should be noted that the percent of repeat spawners value deducted for 1999 in the determination of survival in terms of virgin grilse, was the mean for the moratorium years.

Egg-to-smolt survival, Northeast Brook, Trepassey

Over the period 1986-92, egg deposition in Northeast Brook, Trepassey showed an overall decline (Table 14 and Fig. 31). Egg-to-smolt survivals corresponding to these egg depositions were more or less stable between 1984 and 1991 but the 1992 year-class showed a marked increase. Survival for the 1993 year-class however decreased, and the decrease continued with 1994, one of the lowest survivals of the time series. There was a significant negative relationship between egg-to-smolt survival and egg deposition (expressed as number eggs/100 m^2 of fluvial habitat) (Fig. 32). Best survival and smolt production was observed for the 1992 year-class, the year of the lowest egg deposition (Figs. 31 and 32).

Net marks

The incidence was of net marks for Middle Brook was considerably higher than for Terra Nova River for all years except 1999 when they were much closer (Table 15). Small salmon had a higher incidence of marks than large salmon in Middle Brook (1997 and 1998), but in Terra Nova River, large salmon predominated in 1997 and 1998 with the reverse true for 1999. Overall, the percentage of marked fish in Middle Brook was lowest in 1999 while in Terra Nova the highest incidence occurred in 1999.

Environmental conditions

Maximum and minimum daily water temperatures (°C), measured at the counting facility in each river, are shown in Appendices 5-9 and Figs. 33-37. Mean daily water levels measured near each counting facility are presented in Appendices 10-14 and Figs. 38-42. Maximum water temperatures reached or exceeded 25 (°C) on several occasions between late June and early August in Indian Bay Brook in 1999; maximum temperatures exceeded 20 (°C) for much of the period from around mid-June through August. Minimum temperatures dropped below 20 (°C) nearly every day, even when the maximum exceeded 25 (°C). For Middle Brook in 1999, maximum water temperatures reached or exceeded 25 (°C) on several occasions from around mid-July to early August; maximum temperatures exceeded 20 (°C) for much of the period from around mid-June through to the first two days of September. Minimum temperatures were below 20 (°C) nearly every day. At the lower Terra Nova River fishway, maximum temperatures in 1999 approached 25 (°C) on one occasion in early August and exceeded 20 (°C) for much of the period from mid-June to the last week in August. Minimum temperatures reached or exceeded 20 (°C) during several days between mid-July and mid-August. Maximum temperatures in Northeast Brook, Trepassey at or in excess of 20 (°C) in 1999 occurred from around the third week of July through August. Minimum temperatures were consistently below 20 (°C). In Northeast River, Placentia, maximum temperatures reached or exceeded 25 (°C) on several occasions during mid-June through August and 20 (°C) for most of the June-August period in 1999. Minimum temperatures were consistently below 20 (°C).

Lowest water levels in Indian Bay Brook, Middle Brook, and Terra Nova River in 1999 occurred around mid-August, following a gradual decrease throughout the summer. From mid-August on, there were substantial increases in water levels for these rivers. Water levels in Northeast Brook, Trepassey in 1999, displayed several peaks. Water levels in Northeast River, Placentia in 1999 decreased gradually from a peak around mid-June through late July at which time another increase was noted, followed by a gradual decline through late August.

Discussion

With the possible exception of Northeast Brook, Trepassey, beginning in 1997, it was anticipated that there would be increased returns of small salmon, corresponding to increases in egg deposition levels as a result of the commercial salmon fishery moratorium (Tables 10 and 11). Unexpectedly, total returns in 1997 were either the lowest or among the lowest of the moratorium years. For detailed analyses examining possible reasons for the overall low returns

of small salmon in insular Newfoundland in 1997, which includes information and discussion for the rivers in this report, see Dempson *et al.* (MS 1998) and O'Connell *et al.* (MS 1998a). While total returns of small salmon in 1998 and 1999 improved over numbers recorded in 1997, they remained average for the moratorium period. The continuing low sea survival recorded for Northeast Brook, Trepassey is consistent with findings for other rivers distributed throughout insular Newfoundland (O'Connell *et al.* MS 2000), which may have played a major role in levels of small salmon returns in recent years.

The occurrence of net marks in Middle Brook and Terra Nova River was likely the result of encounters with illegal and legal fishing gear in coastal waters and illegal gear in freshwater below the counting facilities. It is not possible to accurately estimate the extent of such removals. Therefore total returns considered in the context of being equivalent to total production during the moratorium have to be regarded as minimum values.

Conservation requirement has never been reached in Terra Nova River. It appears that management measures in effect for Terra Nova River in 1998 and 1999 were effective in maintaining egg deposition near the 1997 level. Judging from exploitation rates in previous years, had these restrictions on retention of small salmon not been in place in 1998 and 1999, egg deposition would have been diminished accordingly. It should be noted that accessible rearing habitat above the lower Terra Nova River fishway more than doubled with the opening of the area above Mollyguajeck Falls. The first returns resulting from the adult transfers in 1985-89 were expected beginning in 1990. In the absence of counts of the numbers of adults ascending Mollyguajeck Falls since 1990, it is not possible to assess the results of the adult stocking. Broodstock used for swim-up fry stocking in the area above Mollyguajeck Falls since 1994 were simply deducted from spawning escapement, i.e., no attempt was made at this stage to back-calculate fry into egg equivalents.

Calculated total returns for Indian Bay Brook, based on annual changes in exploitation rates recorded for Middle Brook, used as an index river, were substantially higher than actual returns in 1997-99. This is in spite of some significant relationships that suggest angling catches and catch rates for Indian Bay Brook reflect trends and abundance for Middle Brook. The analyses could have been confounded to some degree by the different methods of collection of angling data, License Stub Return System information for 1997-99 versus information from River Guardians prior to 1997. The ratio of number of small salmon retained estimated from the stub to estimates provided by River Guardians (S/G) was less than 1 for Middle Brook and similar to or greater than 1 for Indian Bay Brook (Table 12). There could also be fundamental differences between rivers with respect to factors affecting catchability. The analyses could also have been influenced by the restrictions placed on retained catch during the quota years of 1992 and 1993. It appears however, for the two rivers in question, that angling data can be used to some degree to reflect the overall direction of trends in abundance, in the indicator sense, but their use for the calculation of absolutes such as total river returns (and hence spawning escapements), is of little or no value.

There is an indication that lower egg depositions result in better egg-to-smolt survivals in Northeast Brook, Trepassey (Fig. 32). Similar, but much tighter and more highly significant relationships have been reported for Conne River in SFA 11 (Dempson *et al.* MS 2000) and

Western Arm Brook in SFA 14B (Mullins and Caines MS 2000).

Cautions associated with the parameter values used to calculate conservation egg requirements have been discussed previously by O'Connell and Dempson (1995) and will not be dealt with here.

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Table 1. Biological characteristics data for female small salmon and with sexes combined plus unsexed fish by year and for the moratorium (1992-99) period for Indian Bay Brook (SFA 5), Newfoundland. WW = whole weight (kg); FL = fork length (cm); RS = repeat spawning grilse.

	Sexes combined plus unsexed							Females						%	
Year	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	Female	N
1992	-	-	-	53.6	4.49	43	2.3	-	-	-	53.7	5.01	32	77	33
1997	1.99	0.43	5	55.6	5.17	10	10.0	1.99	0.43	5	56.0	3.93	6	100	6
1998	1.63	0.47	20	52.9	4.26	22	9.5	1.75	0.50	13	53.9	4.16	13	68	13
1999	1.90	0.31	14	53.9	3.52	24	3.6	1.86	0.30	7	53.6	4.71	5	90	9
Moratorium 1992-99	1.78	0.43	39	53.7	4.29	99	4.8	1.83	0.43	25	54.0	4.63	56	78	61

Table 2. Biological characteristics data for female small salmon and with sexes combined plus unsexed fish by year and for pre-moratorium (1984-91) and moratorium (1992-99) periods for Middle Brook, Bonavista Bay (SFA 5), Newfoundland. WW = whole weight (kg); FL = fork length (cm); RS = repeat spawning grilse.

	Sexes combined plus unsexed							Females						%	
Year	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	Female	N
1984	1.48	0.39	155	49.9	4.31	155	7.7	1.48	0.40	121	49.8	4.43	121	79	121
1985	1.48	0.35	115	49.5	4.46	115	4.4	1.51	0.34	89	50.2	4.20	89	82	89
1986	1.63	0.47	54	52.2	4.56	55	18.2	1.58	0.47	41	52.0	4.75	42	86	42
1987	1.33	0.34	19	49.9	3.14	19	15.8	1.30	0.33	7	49.5	3.36	7	41	7
1988	1.32	0.41	46	49.3	3.47	47	0.0	1.37	0.51	22	49.7	3.82	22	71	22
1989	1.48	0.30	9	51.5	4.37	15	26.7	1.80		1	53.3	0.35	2	100	2
1990	1.67	0.24	16	52.3	2.39	16	25.0	1.69	0.27	11	52.7	2.67	11	85	11
1991	1.50	0.45	11	53.4	4.82	11	9.1	1.40	0.50	4	51.5	5.34	4	50	4
1992	1.64	0.43	78	53.6	3.96	93	8.2	1.74	0.40	37	54.1	3.27	48	83	48
1993	1.72	0.44	120	53.7	4.38	137	0.8	1.65	0.42	71	53.2	4.40	79	76	79
1994	1.78	0.40	72	53.2	3.61	73	1.6	1.75	0.33	33	53.0	3.42	34	74	34
1995	1.55	0.45	83	51.3	4.11	83	2.5	1.47	0.34	33	51.5	4.31	33	62	33
1996	1.96	0.42	73	54.2	3.74	73	15.7	1.95	0.38	41	54.2	3.58	41	82	41
1997	1.73	0.42	51	54.1	4.67	51	3.9	1.72	0.43	40	53.8	4.67	40	81	42
1998	1.78	0.56	19	54.2	4.92	19	15.8	1.63	0.51	15	53.3	4.76	15	88	15
1999	1.79	0.56	18	54.3	4.56	18	16.7	2.00	0.61	6	55.3	5.65	6	86	6
Pre-moratorium 1984-91	1.48	0.40	425	50.2	4.34	433	9.1	1.50	0.40	296	50.4	4.34	298	78	298
Moratorium 1992-99	1.73	0.45	514	53.4	4.22	547	5.8	1.71	0.42	276	53.4	4.13	296	77	298

Table 3. Biological characteristics data for female small salmon and with sexes combined plus unsexed fish by year and for pre-moratorium (1984-91) and moratorium (1992-98) periods for Terra Nova River, Bonavista Bay (SFA 5), Newfoundland. WW = whole weight (kg); FL = fork length (cm); RS = repeat spawning grilse.

	Sexes combined plus unsexed							Females						%	
Year	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	Female	N
1984	1.59	0.40	118	50.2	4.43	118	12.7	1.57	0.36	73	50.2	3.74	73	74	73
1985	1.47	0.35	128	51.0	3.99	141	11.4	1.47	0.37	18	51.8	4.42	29	71	30
1986	1.70	0.39	99	53.4	3.72	99	29.6	1.62	0.36	36	52.6	3.65	36	67	36
1987	1.56	0.34	59	51.9	3.60	58	18.6	1.52	0.32	36	51.5	3.48	35	72	36
1988	1.81	0.40	47	52.8	3.67	46	31.9	1.70	0.65	4	50.0	5.72	4	57	4
1989	1.67	0.33	32	51.3	3.78	32	22.6							0	0
1990	1.65	0.36	50	52.0	3.86	50	10.6	1.70	0.39	5	51.0	4.47	5	100	5
1991	1.43	0.39	29	51.3	3.07	29	6.9	1.00	0.00	2	49.5	4.95	2	100	2
1992	1.76	0.37	84	53.0	3.65	95	1.1	1.30	0.30	6	49.3	2.64	6	75	6
1993	1.70	0.36	49	54.0	3.57	49	4.2	1.63	0.40	12	53.0	4.55	12	80	12
1994	1.80	0.42	82	54.8	3.72	83	10.4	1.75	0.50	15	55.0	5.33	16	84	16
1995	1.68	0.42	67	53.4	4.25	67	15.4	1.58	0.45	21	52.8	5.11	21	68	21
1996	1.71	0.42	63	53.7	4.27	63	13.1	1.57	0.39	19	52.4	4.53	19	76	19
1997	1.55	0.27	23	53.2	4.00	23	13.0	1.43	0.14	4	52.7	5.12	4	100	4
1998	1.50	0.14	2	51.5	-	2	0.0	1.60	-	1	51.5	-	1	50	1
Pre-moratorium 1984-91	1.60	0.39	562	51.6	4.04	573	17.5	1.56	0.38	174	51.2	3.91	184	72	186
Moratorium 1992-98	1.72	0.39	370	53.7	3.91	382	8.8	1.59	0.42	78	52.9	4.83	79	76	79

Table 4. Biological characteristics data for female salmon kelts (small and large combined) and with sexes combined plus unsexed fish by year and for pre-moratorium (1985-91) and moratorium (1992-99) periods for Northeast Brook, Trepassey (SFA 9), Newfoundland. FL = fork length (cm); RS = repeat spawning grilse.

Year	Sexes combined plus unsexed				Females			%	
	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ FL	SD	N	Female	N
1985	55.0	4.88	16	6.7	57.6	5.94	4	25	4
1986	53.7	4.35	86	7.2	52.6	3.59	68	79	68
1987	54.3	3.63	104	13.7	53.7	3.57	83	80	83
1988	53.1	4.70	23	0.0	53.4	1.95	13	57	13
1989	52.4	4.05	63	8.6	52.3	4.16	48	77	49
1990	52.4	5.66	21	0.0	52.3	5.94	19	90	19
1991	55.6	3.69	55	5.9	54.9	3.64	43	78	43
1992	55.6	3.85	41	7.7	55.3	3.98	36	88	36
1993	57.6	2.79	33	14.8	57.4	2.83	27	82	27
1994	56.0	3.80	42	5.7	55.3	3.72	31	79	31
1995	54.5	3.97	44	9.3	54.8	3.41	37	84	37
1996	56.4	4.82	65	7.5	55.8	4.52	54	83	54
1997	56.7	6.39	39	17.6	56.8	6.80	34	88	35
1998	56.2	4.62	54	8.3	56.4	4.72	48	89	48
1999	57.0	5.57	35	3.1	56.9	5.64	34	97	34
*Pre-moratorium 1984-91	54.1	4.24	409	8.2	53.6	4.02	314	77	315
*Moratorium 1992-99	56.3	4.73	312	9.2	56.1	4.74	265	86	266

*These time periods reflect the year of adult return, e.g., kelts sampled in 1999 returned as bright adults in 1998.

Table 5. Biological characteristics data for female small salmon and with sexes combined plus unsexed fish by year and for pre-moratorium (1984-91) and moratorium (1992-99) periods for Northeast River, Placentia Bay (SFA 10), Newfoundland. WW = whole weight (kg); FL = fork length (cm); RS = repeat spawning grilse.

	Sexes combined plus unsexed							Females						%	
Year	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	% RS year of return	$\bar{X}$ WW	SD	N	$\bar{X}$ FL	SD	N	Female	N
1984	1.50	0.18	25	52.1	2.40	27	3.7	1.51	0.19	22	52.2	2.32	24	89	24
1985	1.55	0.24	51	51.6	3.26	51	7.8	1.56	0.24	47	51.8	3.25	47	92	47
1986	1.67	0.25	68	53.1	2.39	69	2.9	1.69	0.25	63	53.3	2.36	63	93	63
1987	1.40		1	52.6	5.09	2	0.0	1.40		1	49.0		1	100	1
1988	1.61	0.27	44	52.6	3.38	43	6.8	1.63	0.27	33	52.8	3.56	33	94	33
1989	1.71	0.22	24	53.7	2.85	25	8.0	1.72	0.24	19	53.9	2.64	19	95	19
1990	1.60	0.31	49	54.6	2.32	49	4.1	1.56	0.29	40	54.4	2.33	40	87	40
1991	1.00		1	47.5		1	0.0	1.00		1	47.5		1	100	1
1992			0	53.5	2.95	10	0.0			0	53.6	3.13	9	100	9
1993	1.83	0.31	23	54.2	3.08	24	4.8	1.76	0.33	10	52.9	1.97	10	83	10
1994	1.62	0.44	30	55.2	3.14	30	40.9	1.73	0.24	5	55.0	2.69	5	100	5
1995	1.77	0.47	48	55.4	3.76	48	31.1	1.72	0.37	25	54.7	3.21	25	100	25
1996	1.83	0.44	71	55.5	3.71	70	30.0	1.81	0.42	45	55.3	3.45	44	98	45
1997	1.87	0.30	44	54.3	2.81	44	4.9	1.88	0.27	31	54.2	2.48	31	94	31
1998	1.72	0.37	33	54.3	3.06	35	11.4	1.68	0.33	24	53.7	2.28	26	76	26
1999	1.92	0.42	24	55.8	3.55	25	24.0	1.89	0.30	17	55.4	2.57	17	89	17
Pre-moratorium 1984-91	1.61	0.26	263	52.9	2.96	267	5.2	1.61	0.26	226	53.0	2.91	228	92	228
Moratorium 1992-99	1.80	0.41	273	55.0	3.39	286	21.1	1.79	0.35	157	54.5	2.93	167	92	168

Table 6. Relative fecundity values used to calculate egg depositions for each river in SFAs 5 and 10.

River	Year	Relative fecundity (No. eggs/Kg)	N
SFA 5			
Middle Brook	1984	1896	102
	1985	1993	84
	1986	1955	36
	1987	2160	5
	1988	2259	10
	1990	1896	10
	1993	2150	31
	Years combined	1980	278
Terra Nova River	1984	1709	46
	1985	2163	7
	1986	1410	15
	1987	2323	3
	1990	2281	5
	1993	1794	8
	Years combined	1761	84
SFA 10			
Northeast River, Placentia	1984	2332	21
	1985	2205	39
	1986	2282	45
	1988	2472	34
	1990	2500	41
	1993	2144	5
	Years combined	2352	186

Table 7. Atlantic salmon conservation requirement for each river in terms of eggs and small salmon.

River	Conservation requirement	
	Eggs (Millions)	Small salmon (No.)
SFA 5		
Indian Bay Brook	4.566	2055
Middle Brook	2.342	1012
Terra Nova River	14.303	7094
SFA 9		
Northeast Brook, Trepasssey	0.144	51
SFA 10		
Northeast River, Placentia	0.719	224

Table 8. Counts of Atlantic salmon at Indian Bay Brook counting fence 1997-99, Middle Brook fishway 1974-99, and lower Terra Nova River fishway 1978-99, Bonavista Bay (SFA 5). Partial counts are in parentheses and are not included in means.

	Indian Bay Brook		Middle Brook		Terra Nova River	
Year	Small	Large	Small	Large	Small	Large
1974			(770)	(77)		
1975			(1119)	(9)		
1976						
1977						
1978			1403	16	810	20
1979			(1350)	(54)	569	170
1980			1712	91	843	39
1981			2414	39	1115	90
1982			1281	20	963	19
1983			1195	75	1210	57
1984			1379	57	1233	107
1985			904	27	1557	112
1986			1036	15	1051	140
1987			914	19	974	56
1988			772	14	1737	206
1989			496	19	1138	142
1990			745	13	1149	144
1991			562	14	873	114
1992			1182	43	1443	270
1993			1959	87	(2713)	(470)
1994			1513	90	1571	242
1995			1139	168	2258	634
1996			1751	161	2005	464
1997	1375	352	1221	262	1577	527
1998	2636	336	2405	196	1780	390
1999	2219	365	1802	130	1836	343
$\bar{X}$ 84-89			917	25	1282	127
95% LCL			610	8	965	75
95% UCL			1223	42	1598	179
N			6	6	6	6
$\bar{X}$ 86-91			754	16	1154	134
95% LCL			540	13	835	83
95% UCL			969	18	1473	185
N			6	6	6	6
$\bar{X}$ 92-98			1596	144	1907	428
95% LCL			1159	74	1487	299
95% UCL			2032	213	2326	557
N			7	7	7	7

Table 9. Counts of Atlantic salmon at the Northeast Brook, Trepassey counting fence, St. Mary's Bay (SFA 9), 1984-99, and the Northeast River fishway, Placentia Bay (SFA 10), 1974-99. Partial counts are in parentheses and are not included in means.

	Northeast Brook, Trepassey		Northeast River, Placentia	
Year	Small salmon	Large salmon	Small salmon	Large salmon
1974			223	9
1975			(186)	(36)
1976			294	56
1977				
1978			390	32
1979			454	37
1980			433	34
1981			334	62
1982			86	36
1983			233	22
1984	89	33	419	44
1985	124	41	384	0
1986	158	30	725	39
1987	91	30	325	16
1988	97	19	543	11
1989	62	18	706	15
1990	71	9	551	25
1991	99	13	353	8
1992	49	10	921	46
1993	79	17	847	65
1994	99	15	677	70
1995	80	12	663	74
1996	73	15	1225	123
1997	50	9	641	185
1998	91	11	756	287
1999	95	18	336	167
$\bar{X}$ 84-89	104	29	517	21
95% LCL	69	19	339	3
95% UCL	138	38	695	39
N	6	6	6	6
$\bar{X}$ 86-91	96	20	534	19
95% LCL	61	11	356	7
95% UCL	132	29	711	31
N	6	6	6	6
$\bar{X}$ 92-98	74	13	819	121
95% LCL	57	10	627	41
95% UCL	92	15	1010	202
N	7	7	7	7

Table 10. Total river returns, spawning escapement, and percentage of conservation requirement achieved in terms of small salmon and eggs for Indian Bay Brook 1997-99, Middle Brook and Terra Nova River 1984-99, Bonavista Bay (SFA 5).

	Total returns		Prop.	Spawning escapement		Egg deposition (Millions)		% cons. req. achieved		Eggs per
Year	Small	Large	Large	Small	Large	Small	Large	Small	Eggs	100 sq. m
				Indian Bay Brook						
1997	1439	353	0.197	1228	351	3.471	1.673	60	113	1332
1998	2716	336	0.110	2383	336	6.734	1.600	116	183	2158
1999*	2248	365	0.140	1983	364	5.604	1.734	96	161	1900
				Middle Brook						
1984	1675	57	0.033	1265	57	2.804	0.260	125	131	1161
1985	1283	27	0.021	745	27	1.838	0.130	74	84	745
1986	1547	15	0.010	758	15	2.014	0.071	75	89	789
1987	1053	19	0.018	866	19	2.006	0.091	86	90	794
1988	1337	14	0.010	629	14	1.211	0.067	62	55	484
1989	626	19	0.029	461	19	1.068	0.091	46	49	439
1990	1070	13	0.012	721	13	1.670	0.062	71	74	656
1991	763	14	0.018	485	14	1.124	0.067	48	51	451
1992	1563	43	0.027	1140	43	3.260	0.205	113	148	1312
1993	2247	88	0.038	1909	84	5.148	0.436	189	238	2115
1994	1844	90	0.047	1423	90	3.648	0.429	141	174	1544
1995	1448	168	0.104	1037	168	1.872	0.801	102	114	1012
1996	2112	161	0.071	1605	161	5.081	0.767	159	250	2215
1997	1287	262	0.169	1209	262	3.335	1.249	119	196	1736
1998	2549	196	0.072	2345	195	6.114	0.927	232	301	2667
1999*	1950	130	0.063	1806	129	4.708	0.615	178	227	2016
				Terra Nova River						
1984	1534	107	0.065	1100	107	2.184	0.440	16	18	80
1985	2012	112	0.053	1431	112	2.830	0.475	20	23	101
1986	1459	140	0.088	974	140	1.817	0.593	14	17	74
1987	1404	56	0.038	940	56	1.812	0.237	13	14	63
1988	2114	206	0.089	1617	206	3.198	0.873	23	28	125
1989	1377	142	0.093	1085	142	2.146	0.602	15	19	84
1990	1518	144	0.087	1052	144	2.081	0.610	15	19	82
1991	1127	114	0.092	815	114	1.612	0.483	11	15	64
1992	1780	270	0.132	1371	270	2.899	1.144	19	28	124
1993	3050	472	0.134	2620	467	5.540	1.977	37	53	230
1994	2035	246	0.108	1305	232	2.759	0.985	18	26	115
1995	2638	638	0.195	1835	587	3.881	2.486	26	45	195
1996	2575	472	0.155	1577	429	3.334	1.818	22	36	158
1997	1800	528	0.227	1137	498	2.419	2.109	16	32	139
1998	1815	390	0.177	1361	387	2.897	1.641	19	32	139
1999*	1952	343	0.149	1615	339	3.437	1.437	23	34	149

*Preliminary

Table 11. Total river returns, spawning escapement, and percentage of conservation requirement achieved in terms of small salmon and eggs for Northeast Brook Trepassey, St. Mary's Bay (SFA 9), and Northeast River, Placentia Bay (SFA 10), 1984-99.

	Total returns		Prop.	Spawning escapement		Egg deposition (Millions)	% cons. req. achieved		Eggs per
Year	Small	Large	Large	Small	Large	Sm.+ Lg.	Small	Eggs	100 sq. m
				Northeast Brook, Trepassey					
1984	89	33	0.270	89	33	0.330	175	229	594
1985	124	41	0.248	124	41	0.450	243	312	809
1986	158	30	0.160	158	30	0.530	310	368	953
1987	91	30	0.248	91	30	0.328	178	227	589
1988	97	19	0.164	97	19	0.306	190	213	551
1989	62	18	0.225	62	18	0.250	122	173	449
1990	71	9	0.113	71	9	0.225	139	156	404
1991	99	13	0.116	99	13	0.358	194	249	644
1992	49	10	0.169	49	10	0.182	96	126	328
1993	79	17	0.177	79	17	0.279	155	193	501
1994	99	15	0.132	99	15	0.344	194	239	619
1995	80	12	0.130	80	12	0.280	157	194	503
1996	73	15	0.170	73	15	0.282	143	196	507
1997	50	9	0.153	50	9	0.194	98	135	349
1998	91	11	0.108	91	11	0.369	178	256	664
1999*	95	18	0.159	95	18	0.358	186	248	643

	Total returns		Prop.	Spawning escapement		Egg deposition (Millions)		% cons. req. achieved		Eggs per
Year	Small	Large	Large	Small	Large	Small	Large	Small	Eggs	100 sq. m
				Northeast River, Placentia						
1984	459	44	0.087	389	44	1.219	0.247	174	204	1084
1985	519	0	0.000	346	0	1.095	0.000	154	152	810
1986	879	39	0.042	645	39	2.313	0.214	288	352	1870
1987	350	16	0.044	317	16	1.104	0.091	142	166	884
1988	637	11	0.017	451	11	1.708	0.065	201	247	1312
1989	809	15	0.018	599	15	2.087	0.085	267	302	1606
1990	699	25	0.035	526	25	1.785	0.150	235	269	1431
1991	368	8	0.021	349	8	1.216	0.045	156	175	933
1992	956	46	0.046	919	46	3.732	0.260	410	555	2953
1993	980	65	0.062	842	65	3.419	0.368	376	527	2801
1994	710	70	0.090	670	70	2.721	0.396	299	434	2306
1995	774	74	0.087	646	74	2.613	0.419	288	422	2243
1996	1420	123	0.080	1102	123	4.598	0.696	492	736	3916
1997	723	185	0.204	592	182	2.462	1.029	264	486	2582
1998	885	287	0.245	622	285	1.869	1.612	278	484	2575
1999*	363	167	0.315	266	159	1.031	0.902	119	269	1430

*Preliminary

Table 12. Comparison of actual and calculated exploitation rates and actual and calculated total river returns of small salmon for Indian Bay Brook, 1997-99.

Year	Small salmon retained (No.)	Ratio S/G[1]	Actual exploitation rate	Calculated[3] exploitation rate	Actual total small salmon returns (No.)	Calculated total small salmon returns (No.)
Middle Brook (base exploitation rate = 0.38[2])						
1994		0.66				
1995		0.77				
1996		0.73				
1997	77		0.060		1287	
1998	188		0.074		2549	
1999	141		0.072		1950	
Indian Bay Brook (base exploitation rate = 0.20[2])						
1994		1.03				
1995		1.04				
1996		1.49				
1997	205		0.142	0.032	1439	6406
1998	315		0.116	0.039	2716	8077
1999	260		0.116	0.038	2248	6842

[1]Ratio of number of small salmon retained derived from the License Stub Return System to the estimate provided by River Guardians

[2]From Porter *et al.* (1996)

[3]See Porter *et al.* (1996) for methodology

Table 13. Atlantic salmon smolt-to-adult survival (back to the river) in terms of small salmon and virgin grilse for Northeast Brook, Trepassey (SFA 9).

	Northeast Brook (Trepassey)				
Year	Smolts (No.)	Small Salmon (No.)	Virgin Grilse (No.)	% Survival	
(i)	year i	year i + 1	year i + 1	Small Salmon	Virgin Grilse
1986	1117	91	91	8.1	8.1
1987	1404	97	89	6.9	6.3
1988	1692	62	62	3.7	3.7
1989	1708	71	67	4.2	3.9
1990	1902	99	91	5.2	4.8
1991	1911	49	42	2.6	2.2
1992	1674	79	75	4.7	4.5
1993	1849	99	90	5.4	4.9
1994	944	80	74	8.5	7.8
1995	792	73	60	9.2	7.6
1996	1749	50	46	2.9	2.6
1997	1829	91	88	5.0	4.8
1998	1727	95	86	5.5	5.0
1999	1419				

Table 14. Estimates of egg deposition, smolt production by year class, and egg-to-smolt survival for Northeast Brook,Trepassey.

Year-class (eggs)	Estimated egg deposition (No.)	Smolt production (No.)	Survival (%)	Eggs/100 m^2
1984	330308	1604	0.49	594
1985	449780	1611	0.36	809
1986	529817	2442	0.46	953
1987	327601	1476	0.45	589
1988	306446	1787	0.58	551
1989	249768	1232	0.49	449
1990	224730	816	0.36	404
1991	358191	1221	0.34	644
1992	182172	1985	1.09	328
1993	278606	2087	0.75	501
1994	344246	(1374)[1]	0.40	619

[1]To age 4 smolts in 1999

Table 15. Incidence of net marks on salmon examined in Middle Brook and Terra Nova River, 1997-99.

River	Year	Fish checked			Number net marked			% Net marked		
		Small	Large	Total	Small	Large	Total	Small	Large	Total
Middle Brook	1997	1141	242	1383	196	23	219	17.2	9.5	15.8
	1998	1055	89	1144	128	5	133	12.1	5.6	11.6
	1999	1393	121	1514	-	-	68	-	-	4.5
Terra Nova River	1997	1335	509	1844	34	19	53	2.5	3.7	2.9
	1998	1228	239	1467	12	6	18	1.0	2.5	1.2
	1999	1661	318	1979	56	5	61	3.4	1.6	3.1

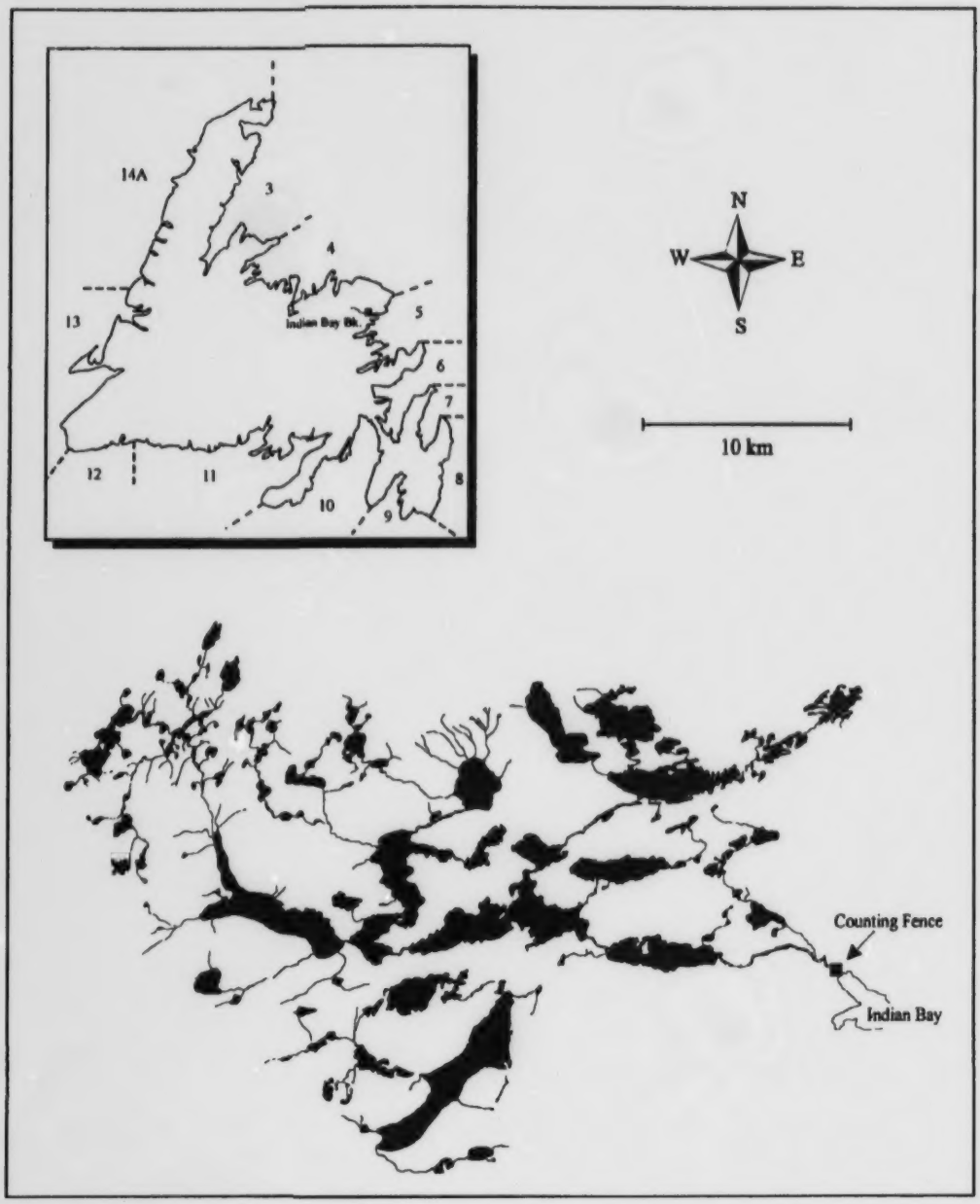

Fig. 1. Map showing the Indian Bay Brook watershed and location of the counting fence in the lower river (square symbol). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Indian Bay Brook.

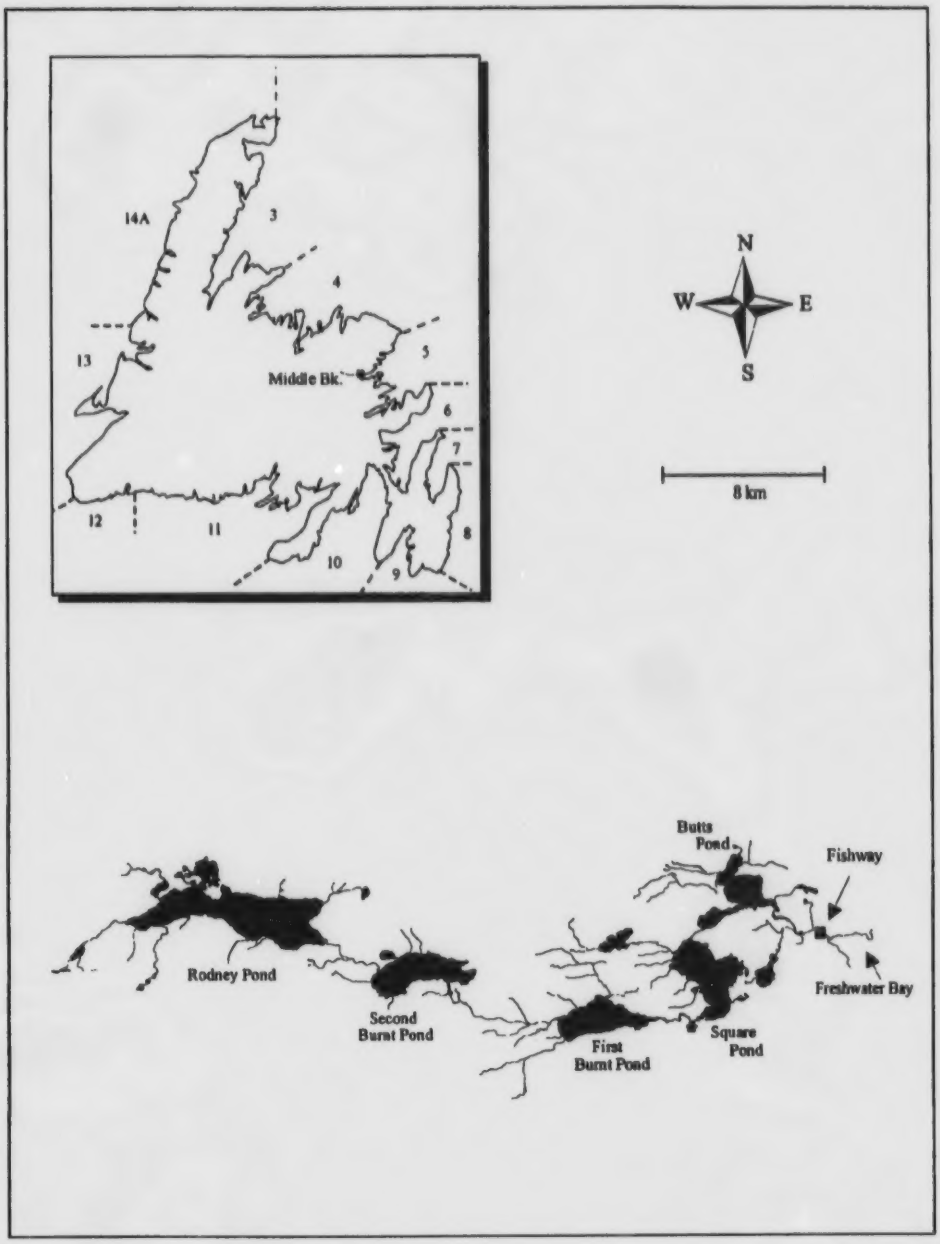

Fig. 2. Map showing the Middle Brook watershed and location of the fishway (square symbol). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Middle Brook.

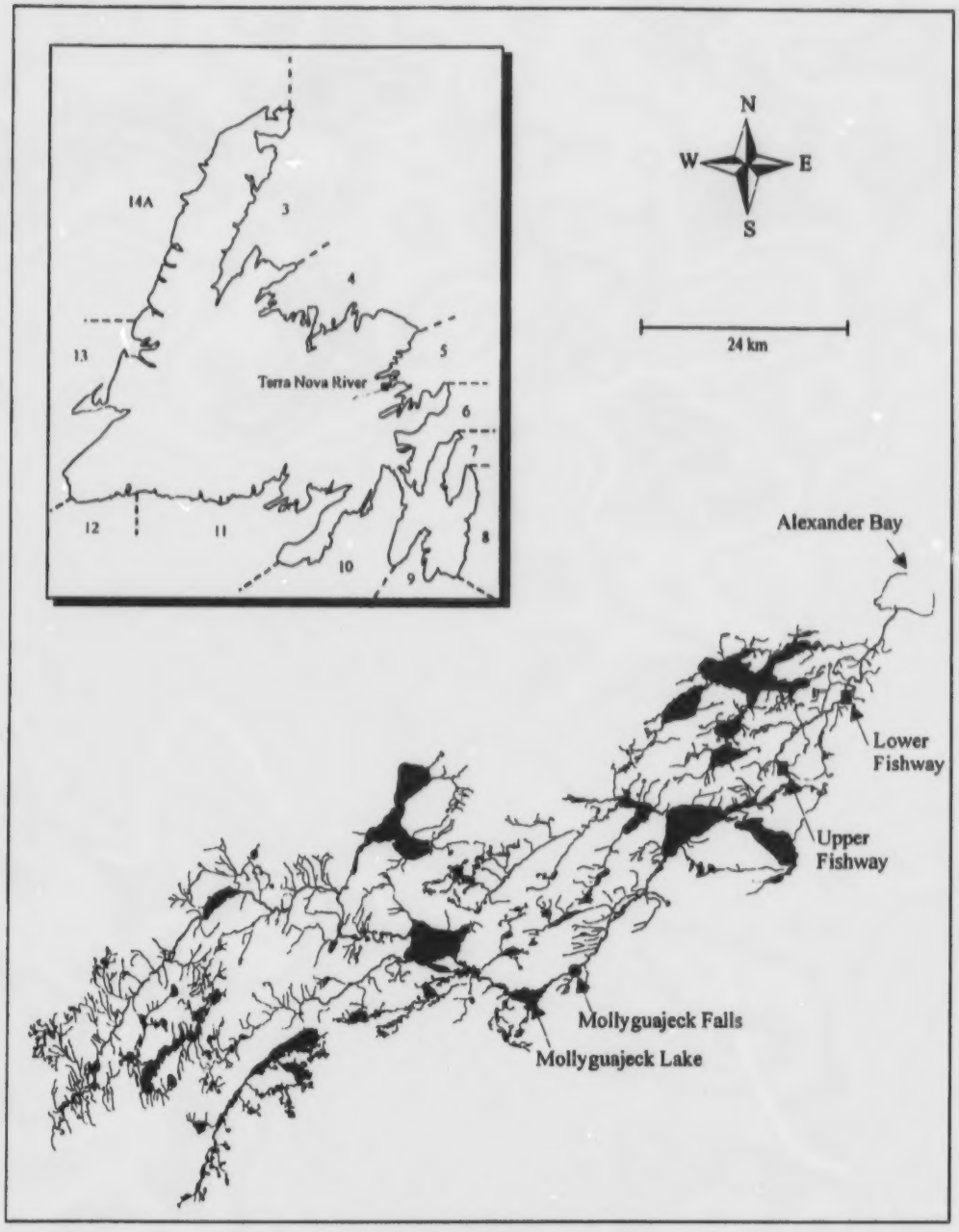

Fig. 3. Map showing the Terra Nova River watershed, location of the fishways (square symbol) and Mollyguajeck Falls (circle). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Terra Nova River.

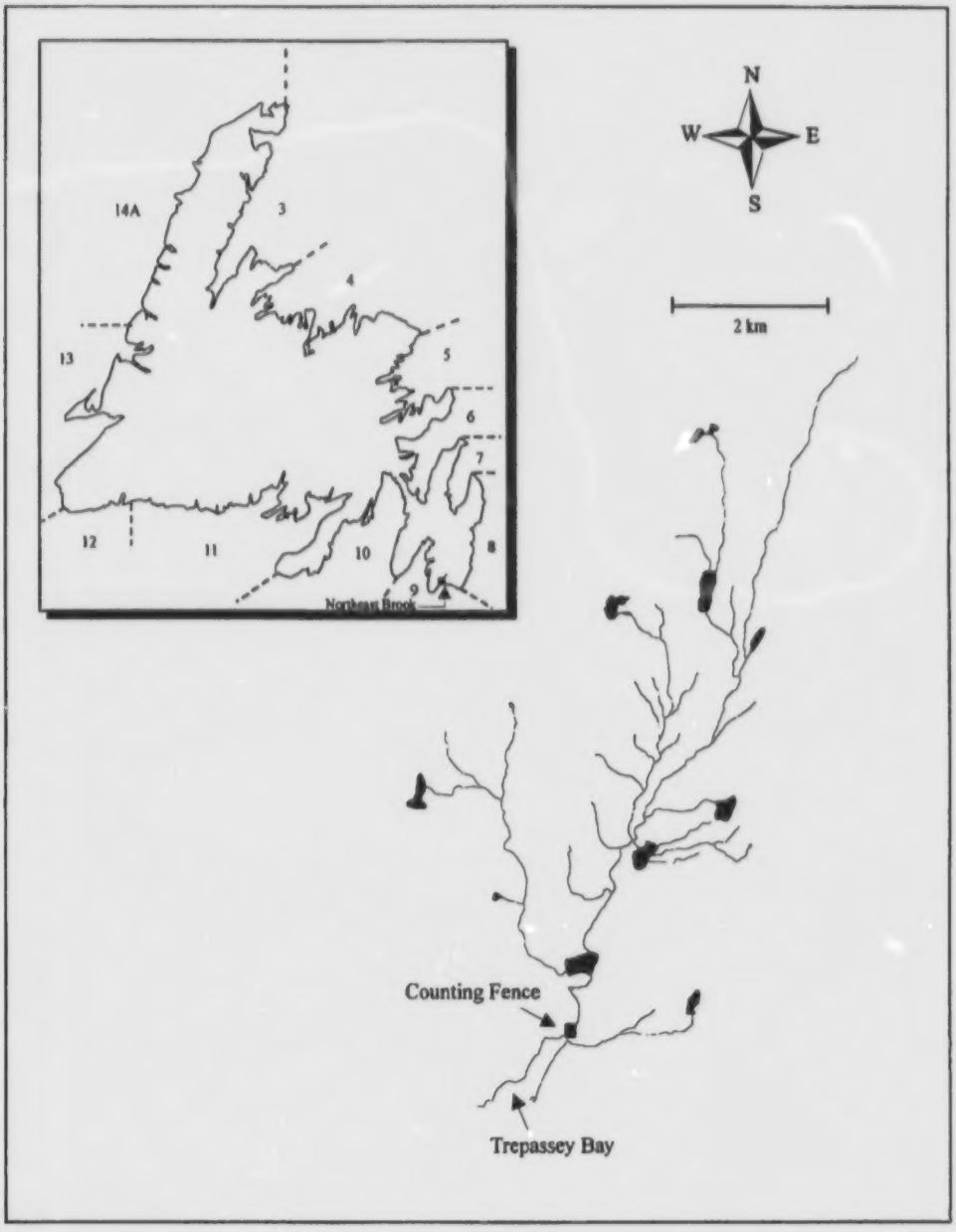

Fig. 4. Map showing the Northeast Brook (Trepassey) watershed and location of the counting fence (square symbol). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Northeast Brook (Trepassey).

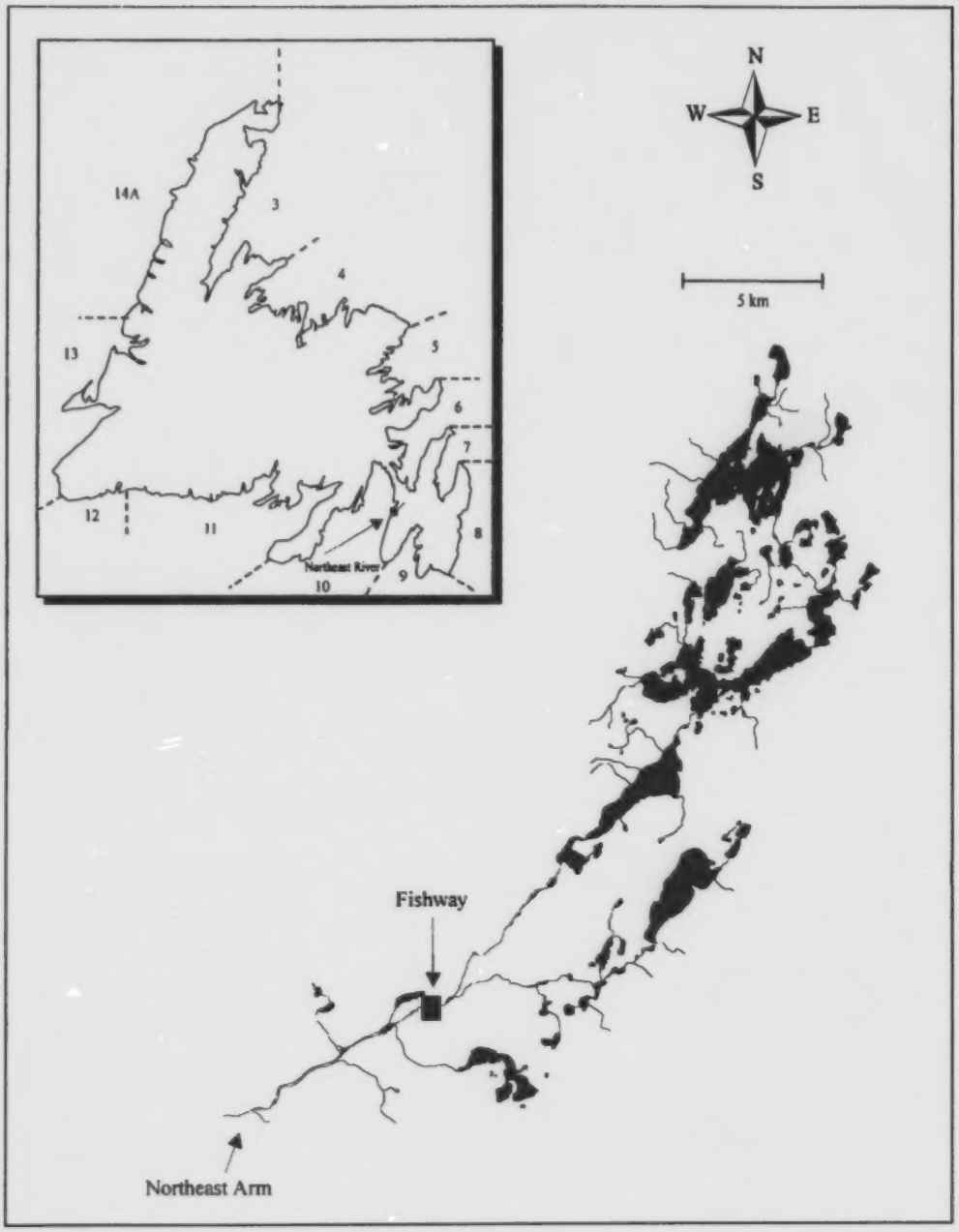

Fig. 5. Map showing the Northeast River (Placentia) watershed and location of the fishway (square symbol). Inset shows the Salmon Fishing Areas in Newfoundland and the location of Northeast River (Placentia).

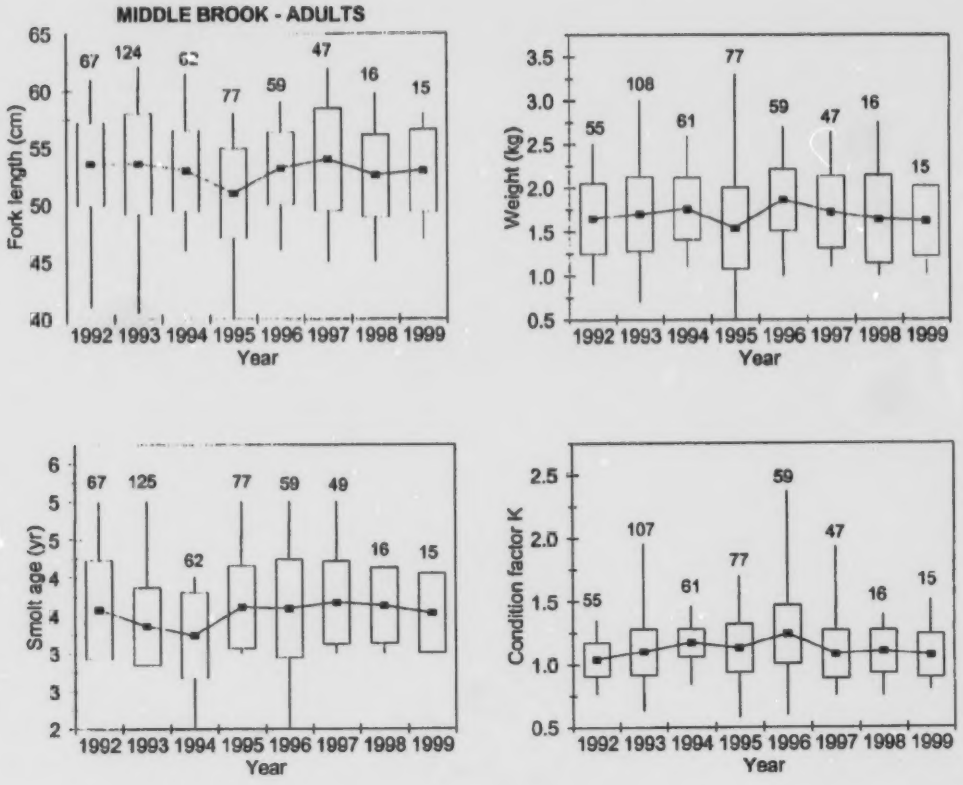

Fig. 6. Mean fork length, mean weight, mean smolt age, and mean condition factor for virgin grilse from Middle Brook, 1992-99. The rectangle around each point denotes the standard deviation; the vertical line is the range; the number above the vertical line is the sample size.

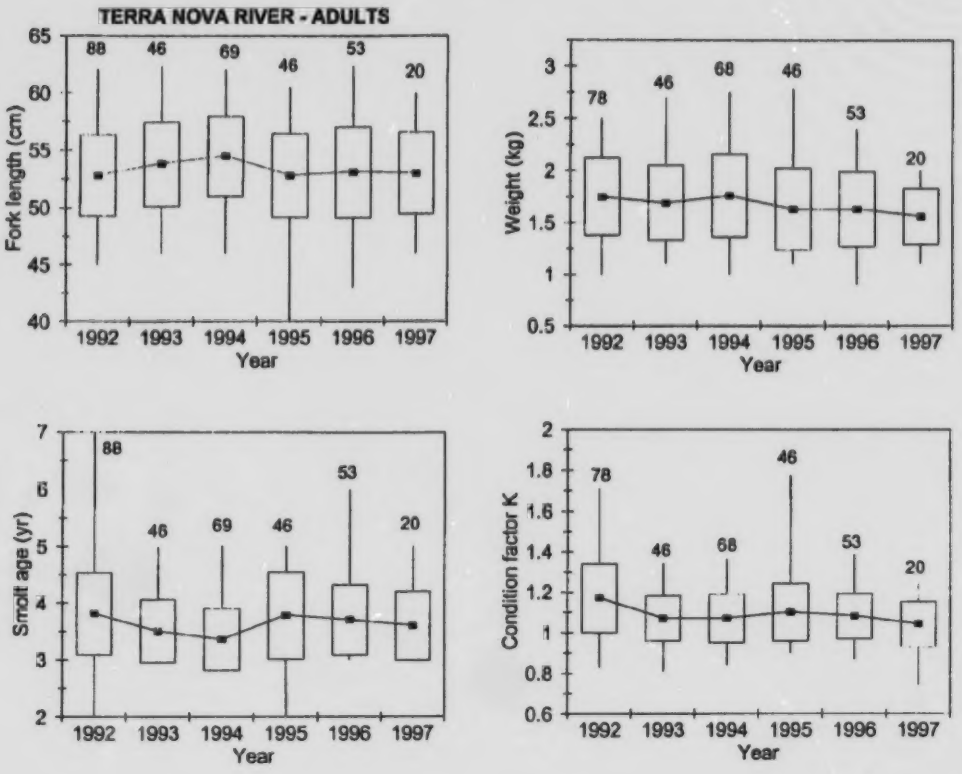

Fig.7. Mean fork length, mean weight, mean smolt age, and mean condition factor for virgin grilse from Terra Nova River, 1992-99. The rectangle surrounding each point denotes the standard deviation; the vertical line is the range; the number above the vertical line is the sample size.

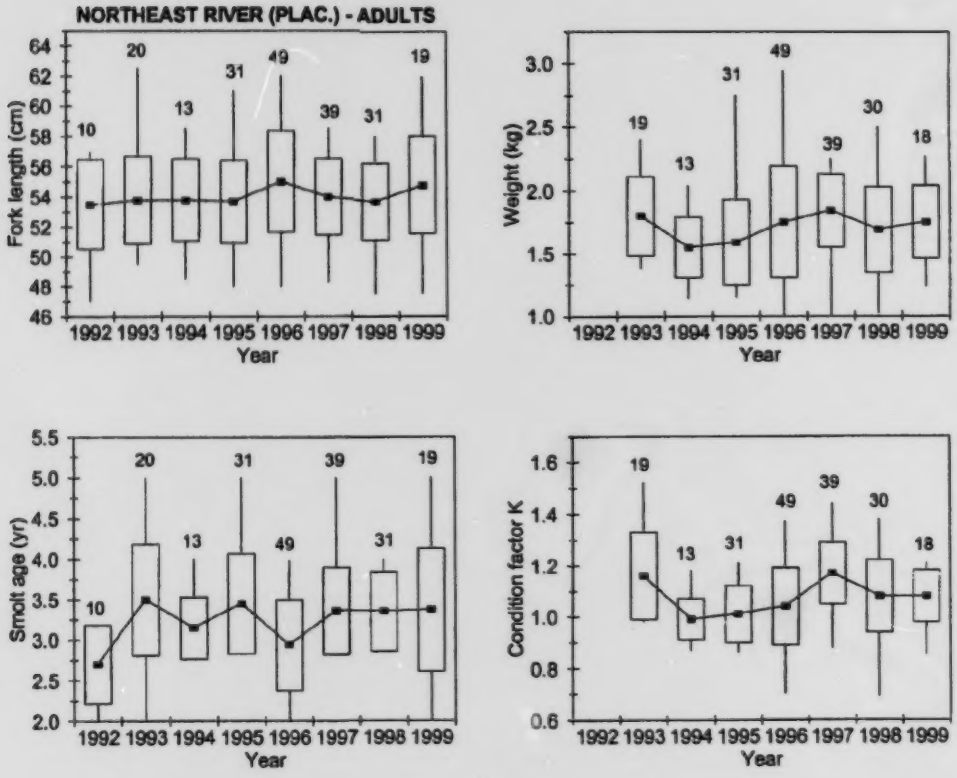

Fig. 8. Mean fork length, mean weight, mean smolt age, and mean condition factor for virgin grilse from Northeast River, Placentia, 1992-99. The rectangle surrounding each point denotes the standard deviation; the vertical line is the range; the number above the vertical line is the sample size.

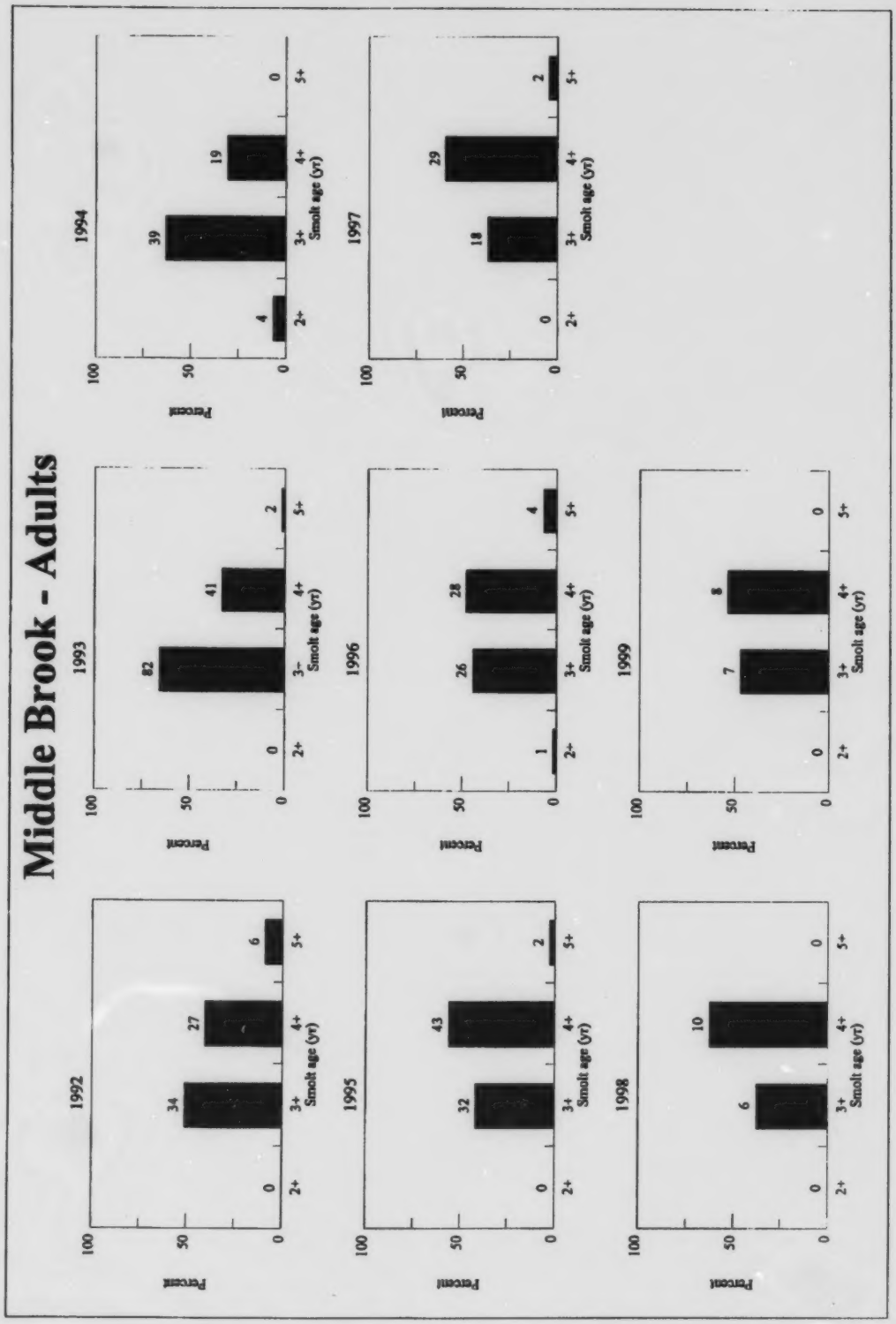

Fig. 9. Smolt age composition for virgin grilse from Middle Brook, 1992-99. The number above each bar denotes sample size.

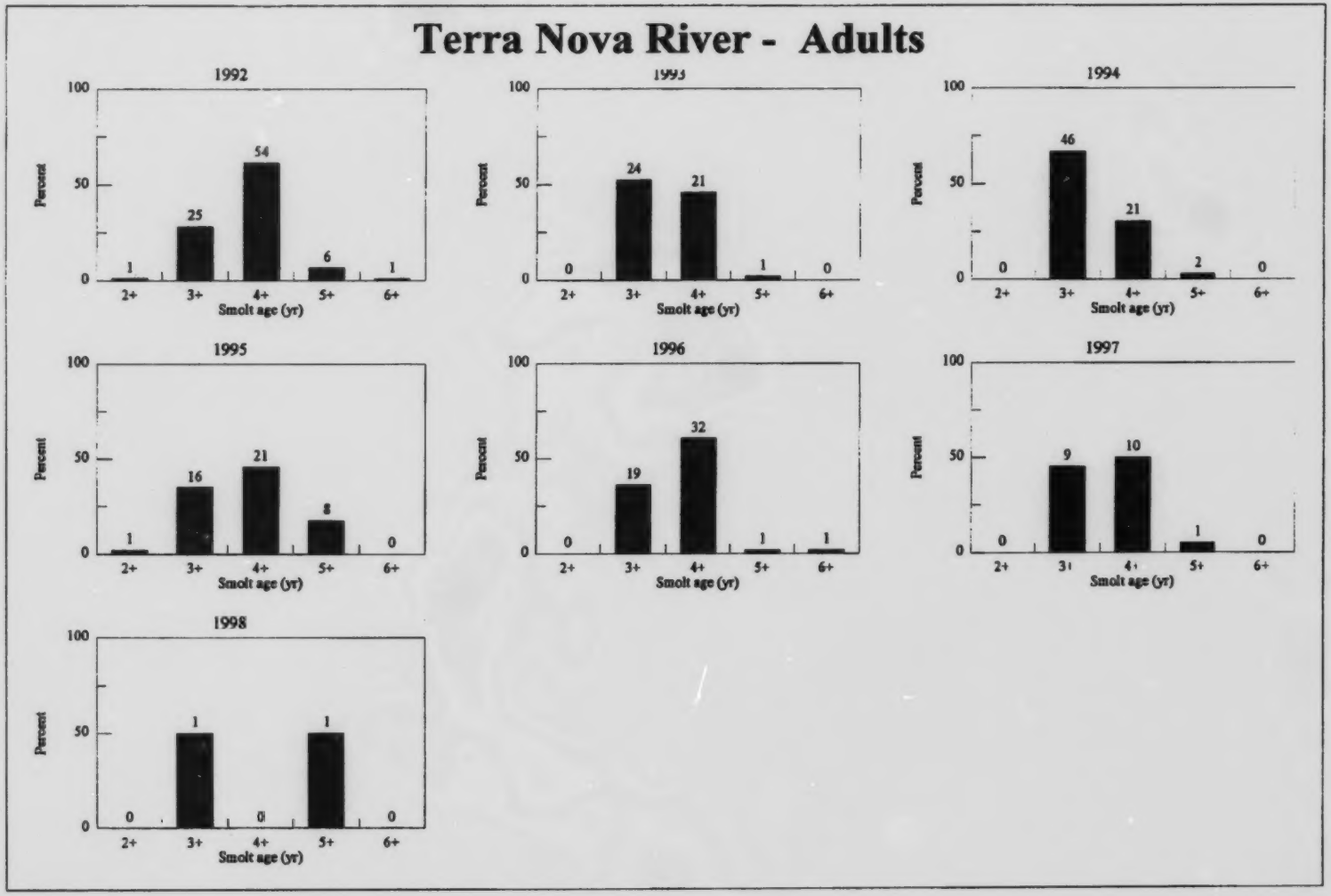

Fig. 10. Smolt age composition for virgin grilse from Terra Nova River, 1992-98. The number above each bar denotes sample size.

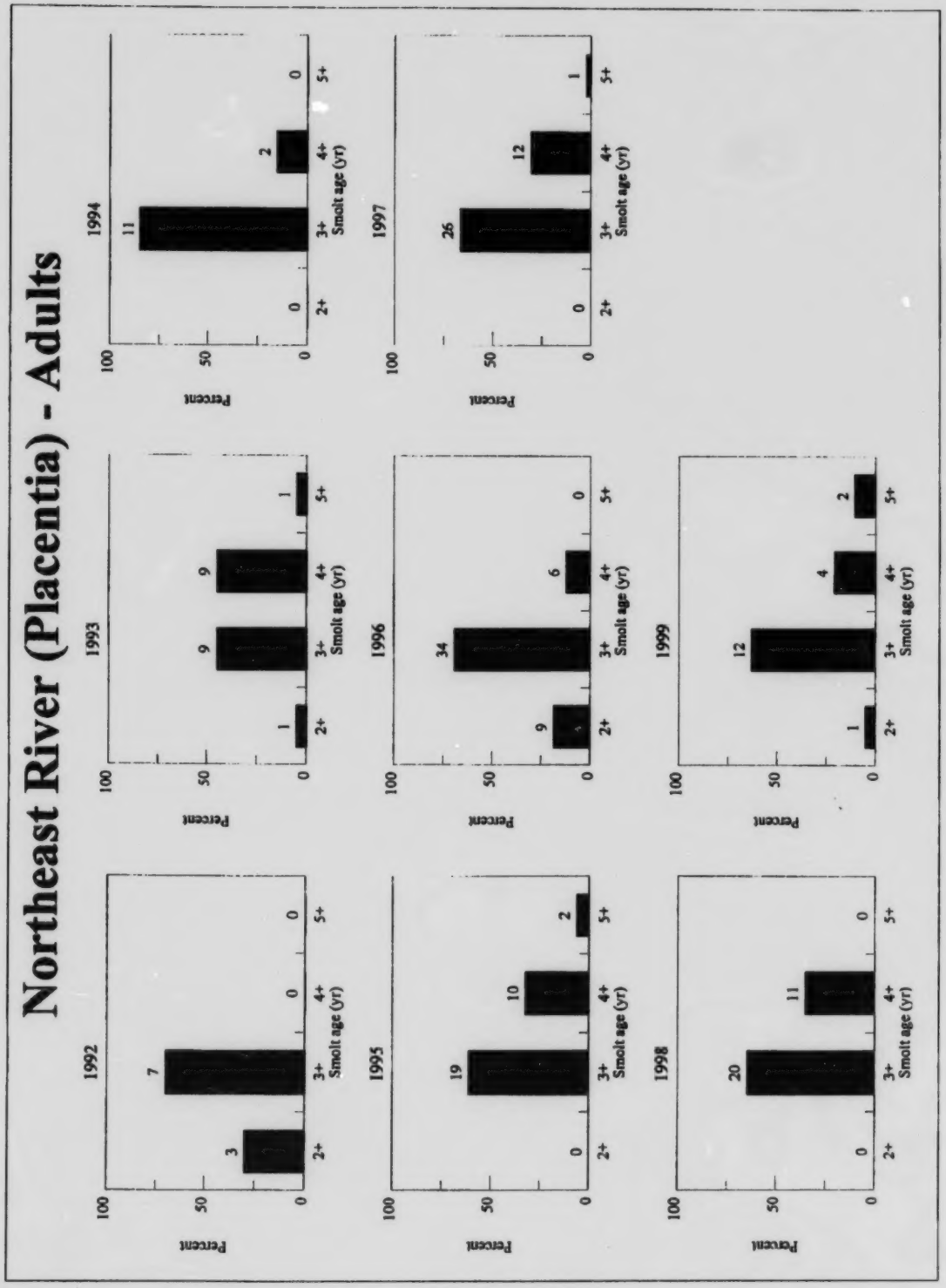

Fig. 11. Smolt age composition for virgin grilse from Northeast River, Placentia, 1992-99. The number above each bar denotes sample size.

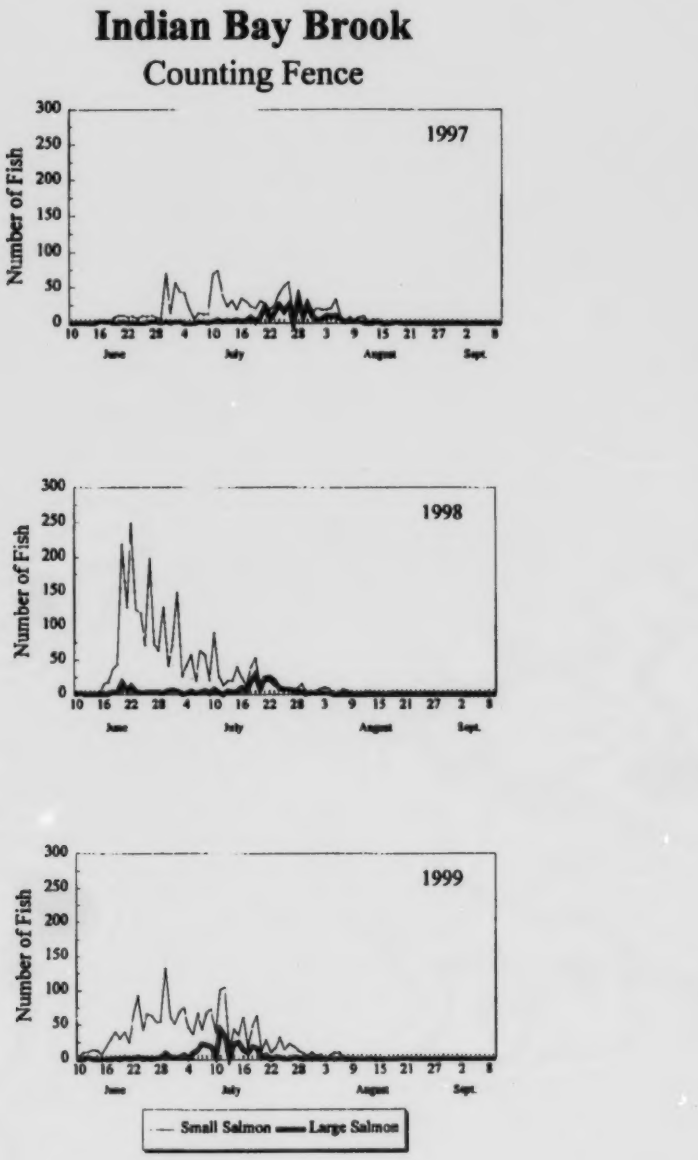

Fig. 12. Daily counts of small and large salmon from the counting fence in Indian Bay Brook, 1997-99.

Indian Bay Brook

Counting Fence

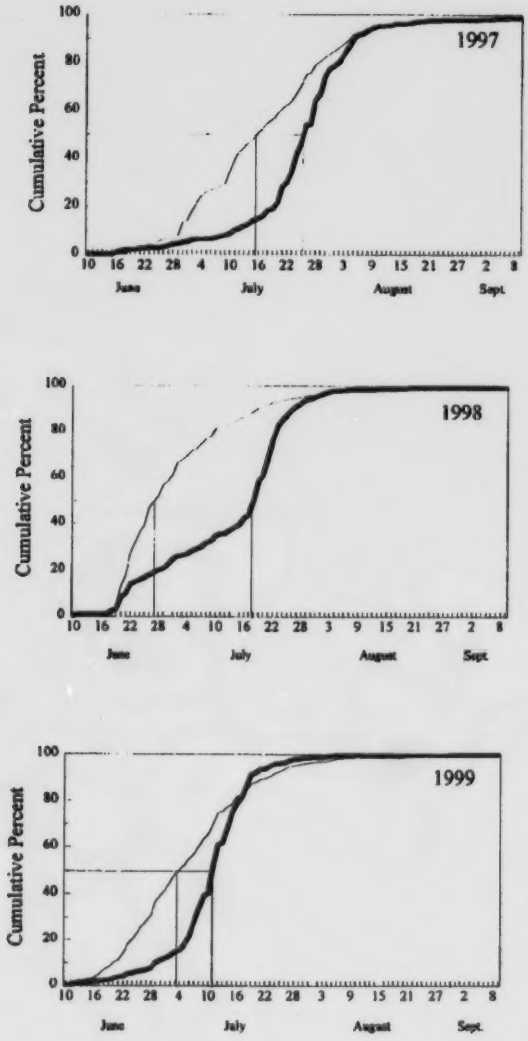

Fig. 13. Daily cumulative percent of small and large salmon from the counting fence in Indian Bay Brook, 1997-99. Dates of median counts are also shown.

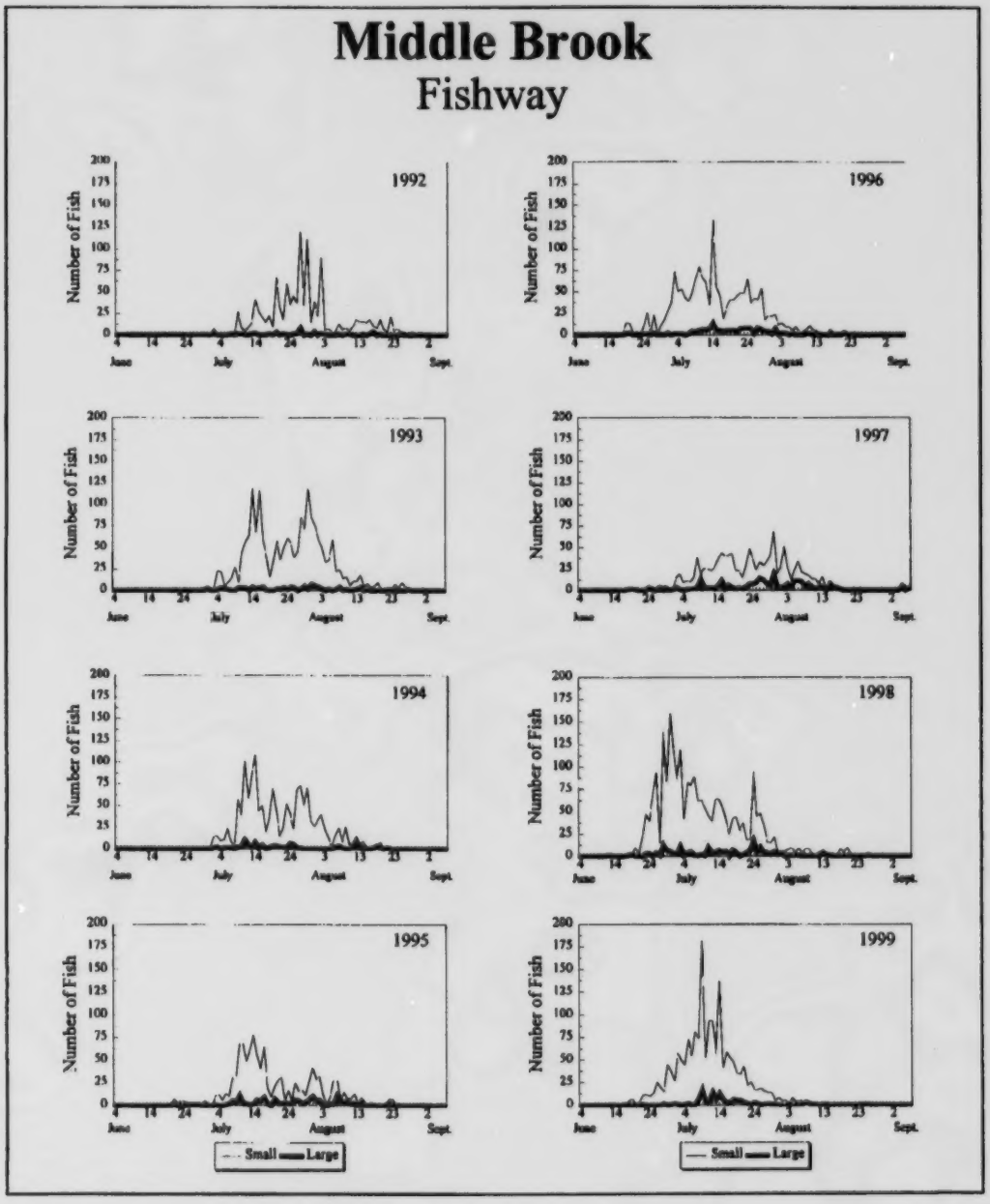

Fig. 14. Daily counts of small and large salmon at the Middle Brook fishway, during the moratorium years, 1992-99.

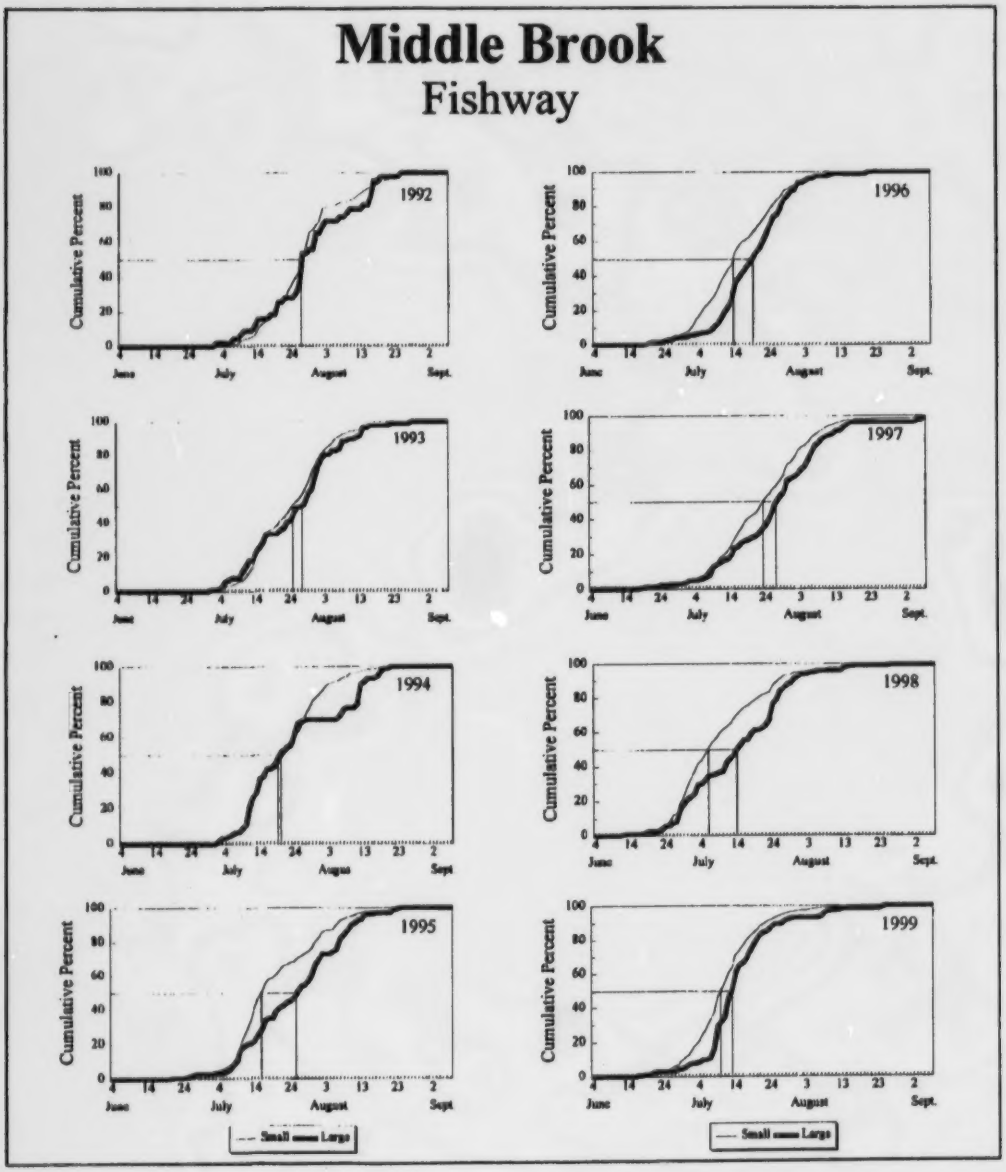

Fig. 15. Daily cumulative percent of small and large salmon at the Middle Brook fishway, during the moratorium years, 1992-99. Dates of median counts are also shown.

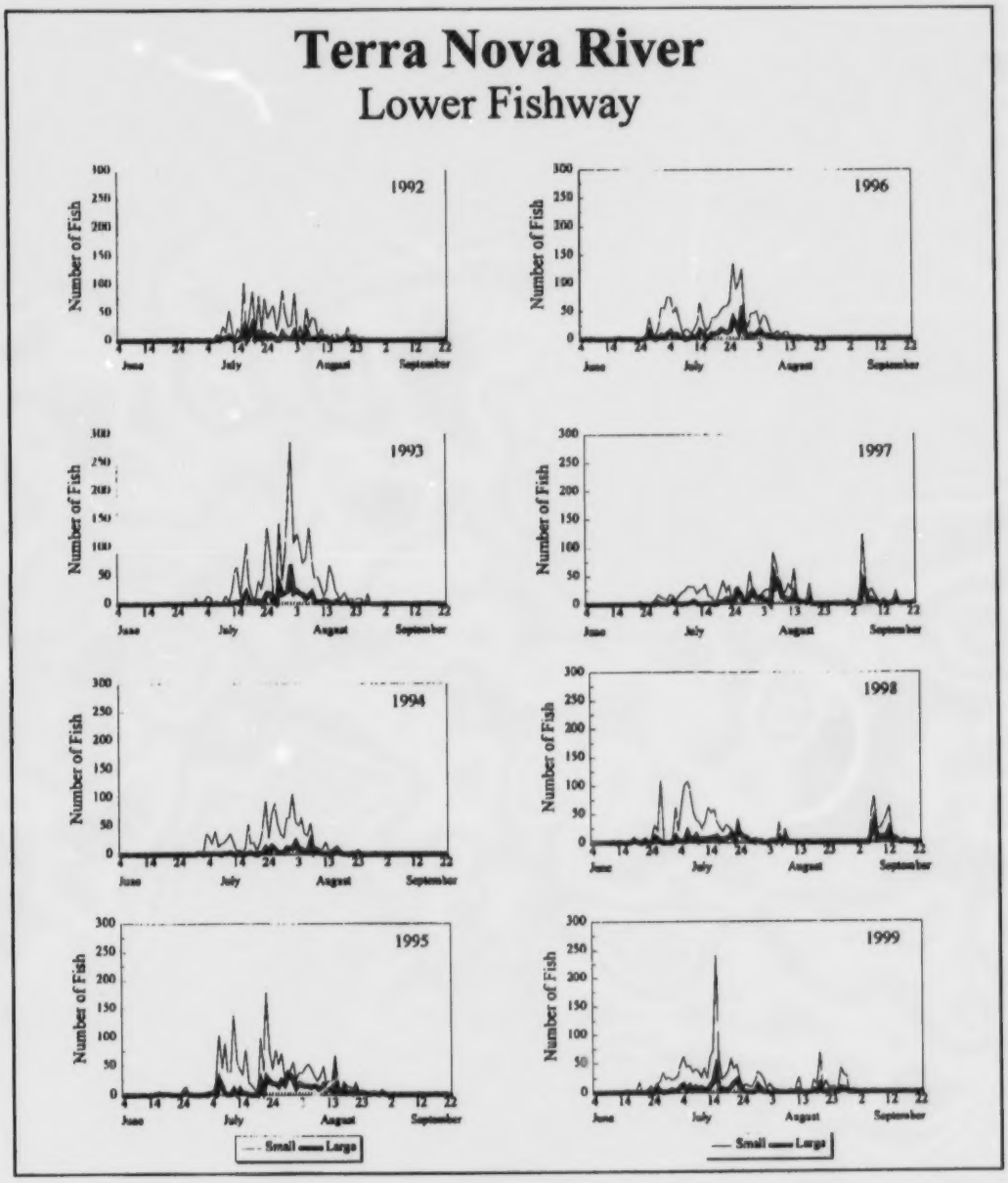

Fig. 16. Daily counts of small and large salmon at the lower fishway in Terra Nova River, during the moratorium years, 1992-99.

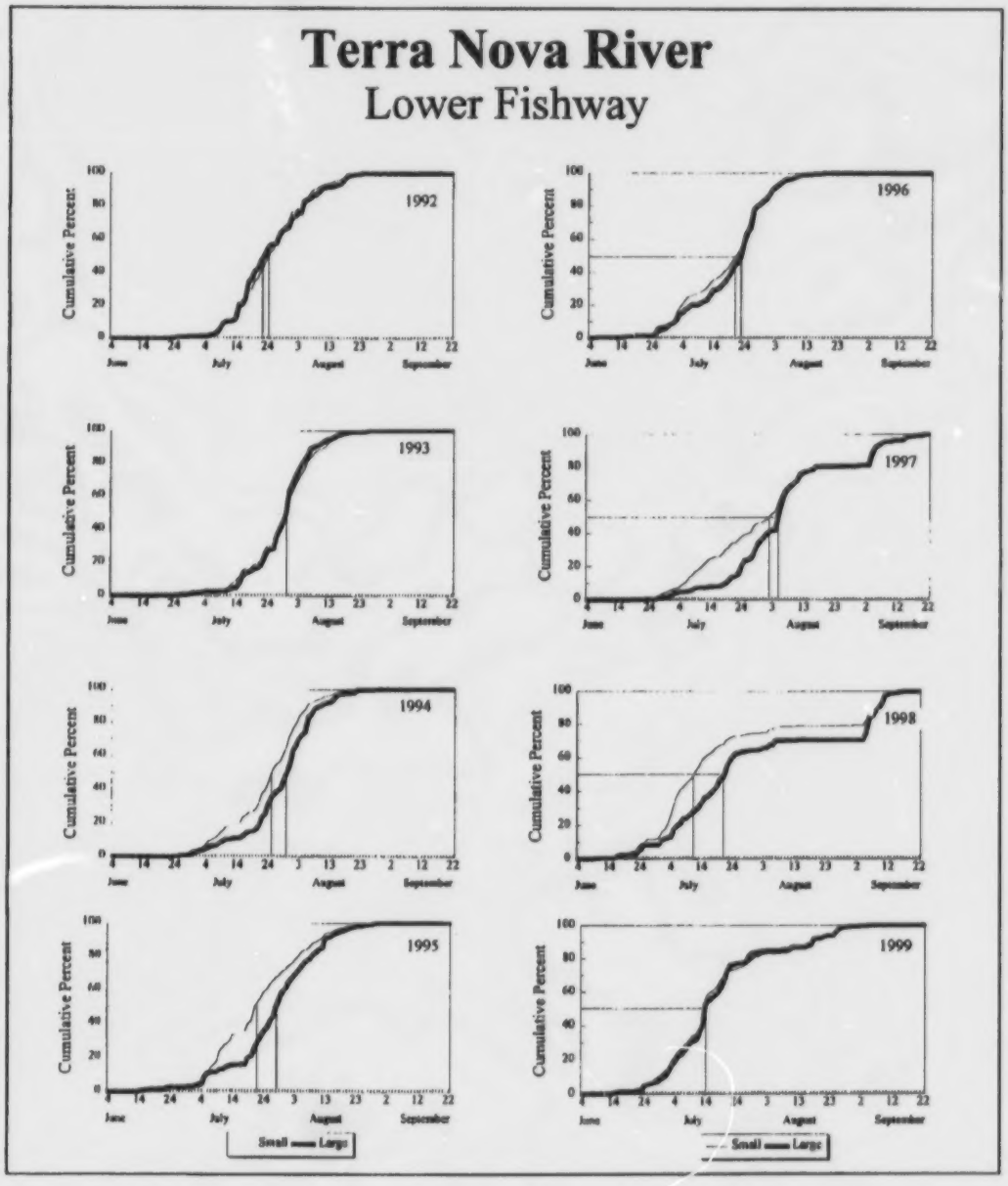

Fig. 17. Daily cumulative percent of small and large salmon at the lower fishway in Terra Nova River, during the moratorium years, 1992-99. Dates of median counts are also shown.

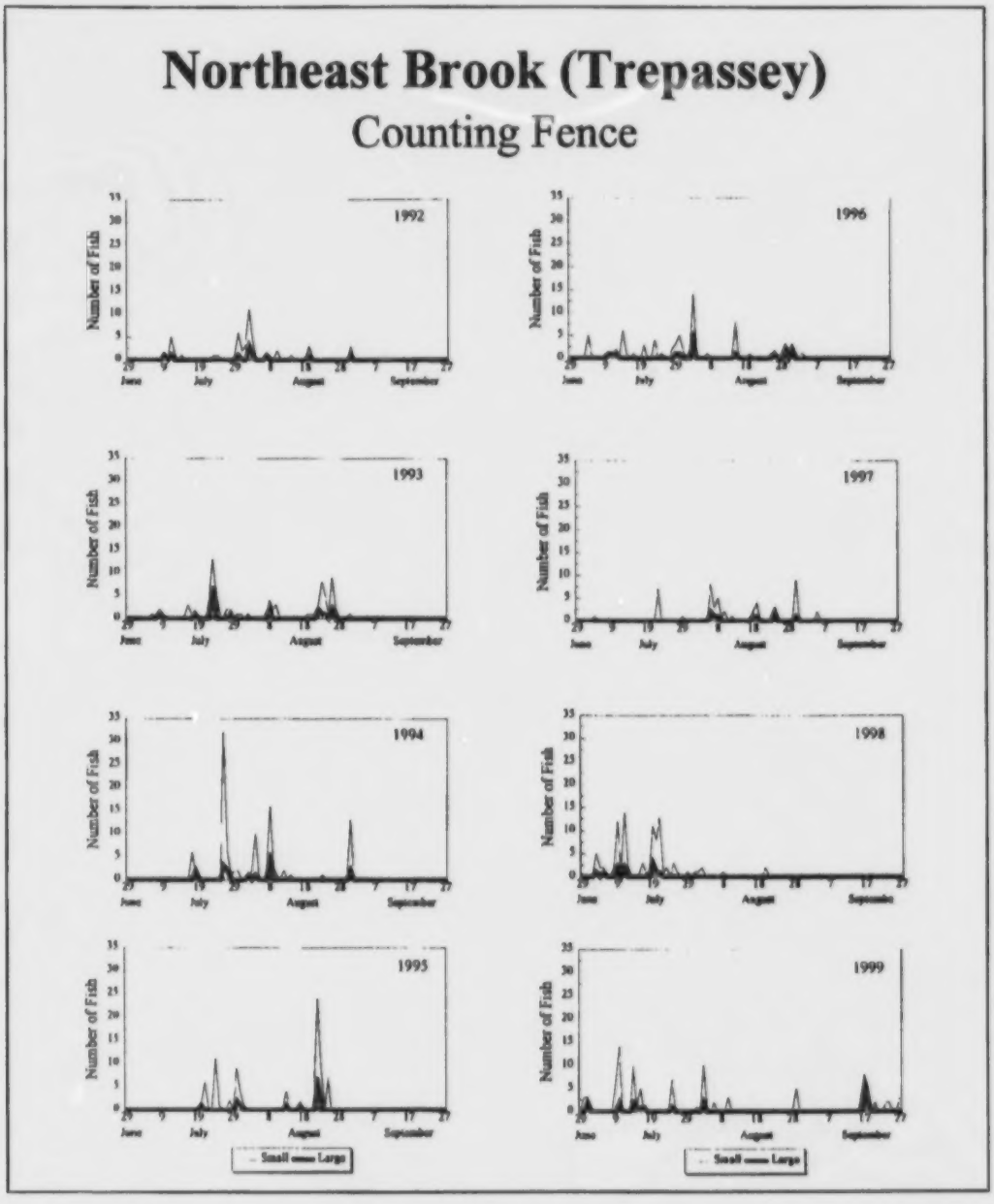

Fig. 18. Daily counts of small and large salmon at the Northeast Brook (Trepassey) counting fence, during the moratorium years, 1992-99.

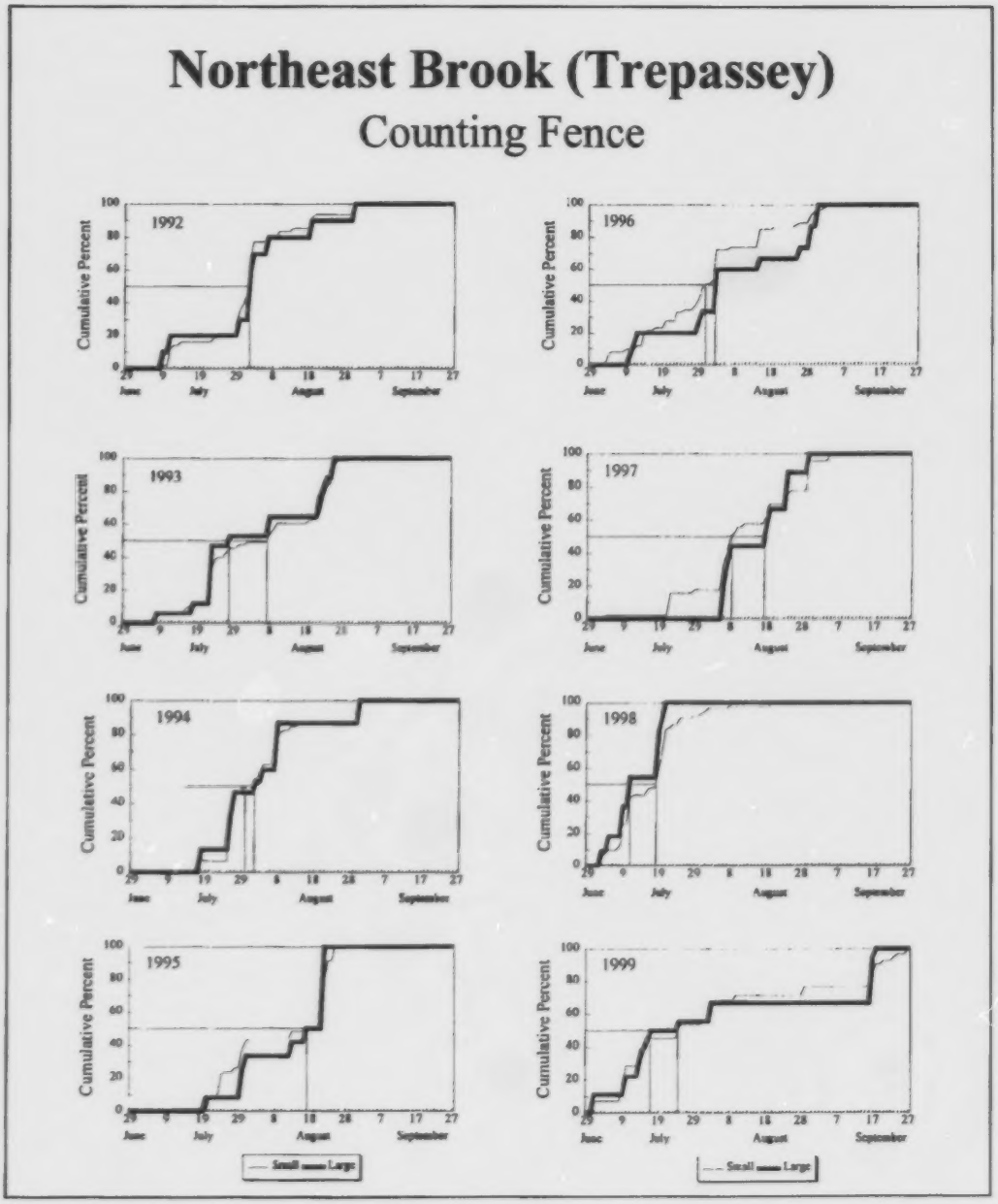

Fig. 19. Daily cumulative percent of small and large salmon at the Northeast Brook (Trepassey) counting fence, during the moratorium years,1992-99. Dates of median counts are also shown.

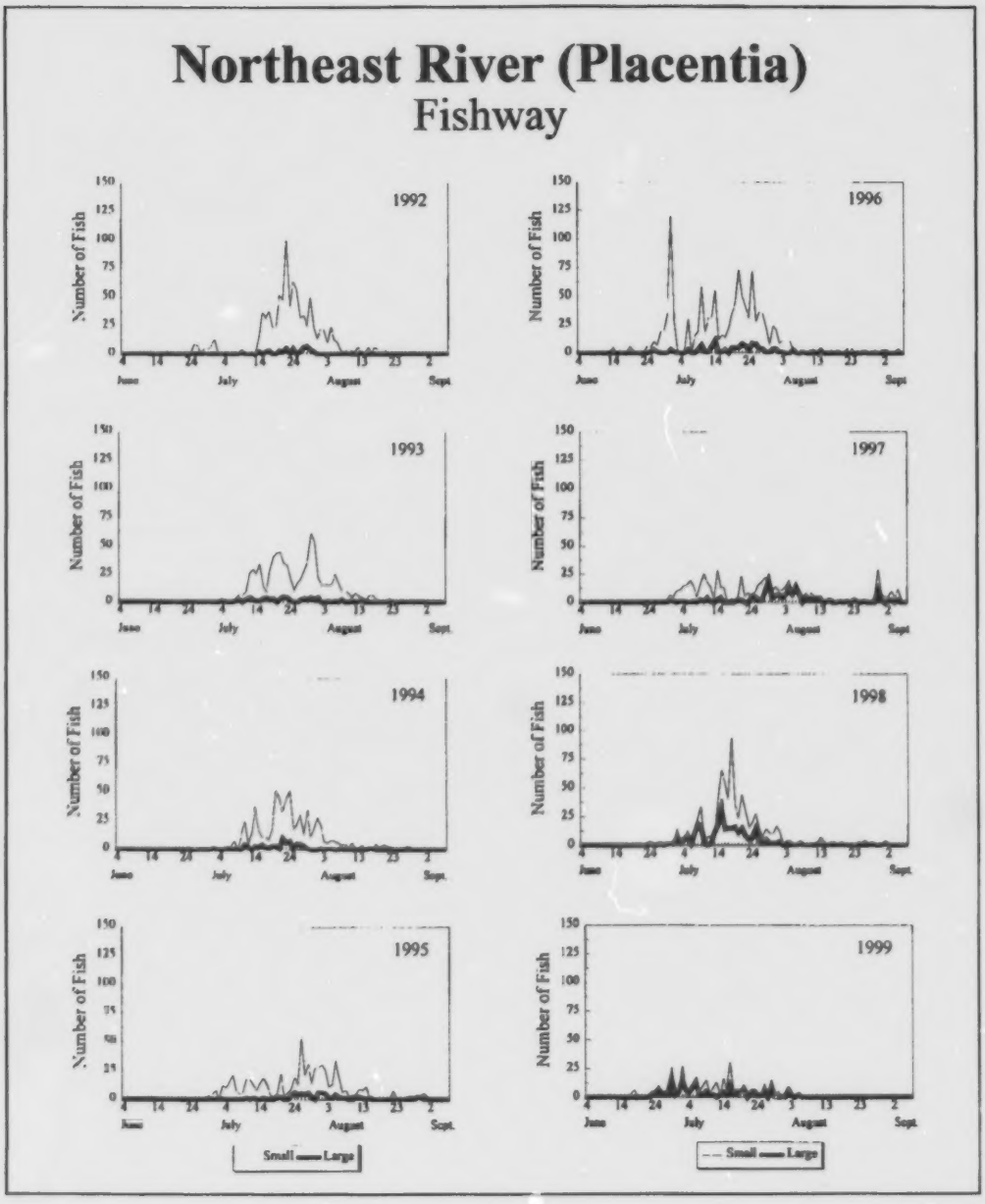

Fig. 20. Daily counts of small and large salmon at the fishway in Northeast River (Placentia), during the moratorium years, 1992-99.

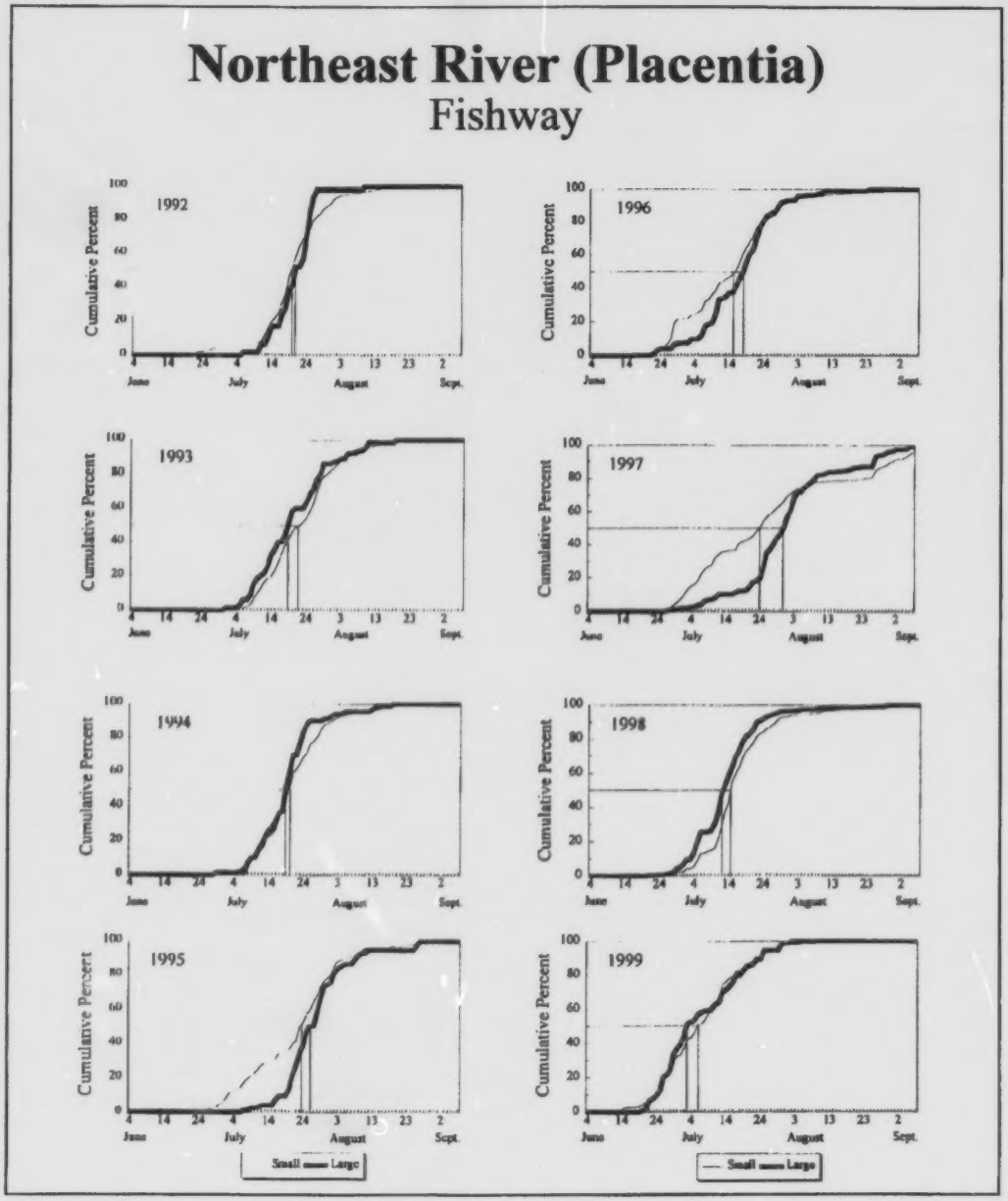

Fig. 21. Daily cumulative percent of small and large salmon at the fishway in Northeast River (Placentia), during the moratorium years, 1992-99. Dates of median counts are also shown.

Salmon Fishing Area 5

Total Returns

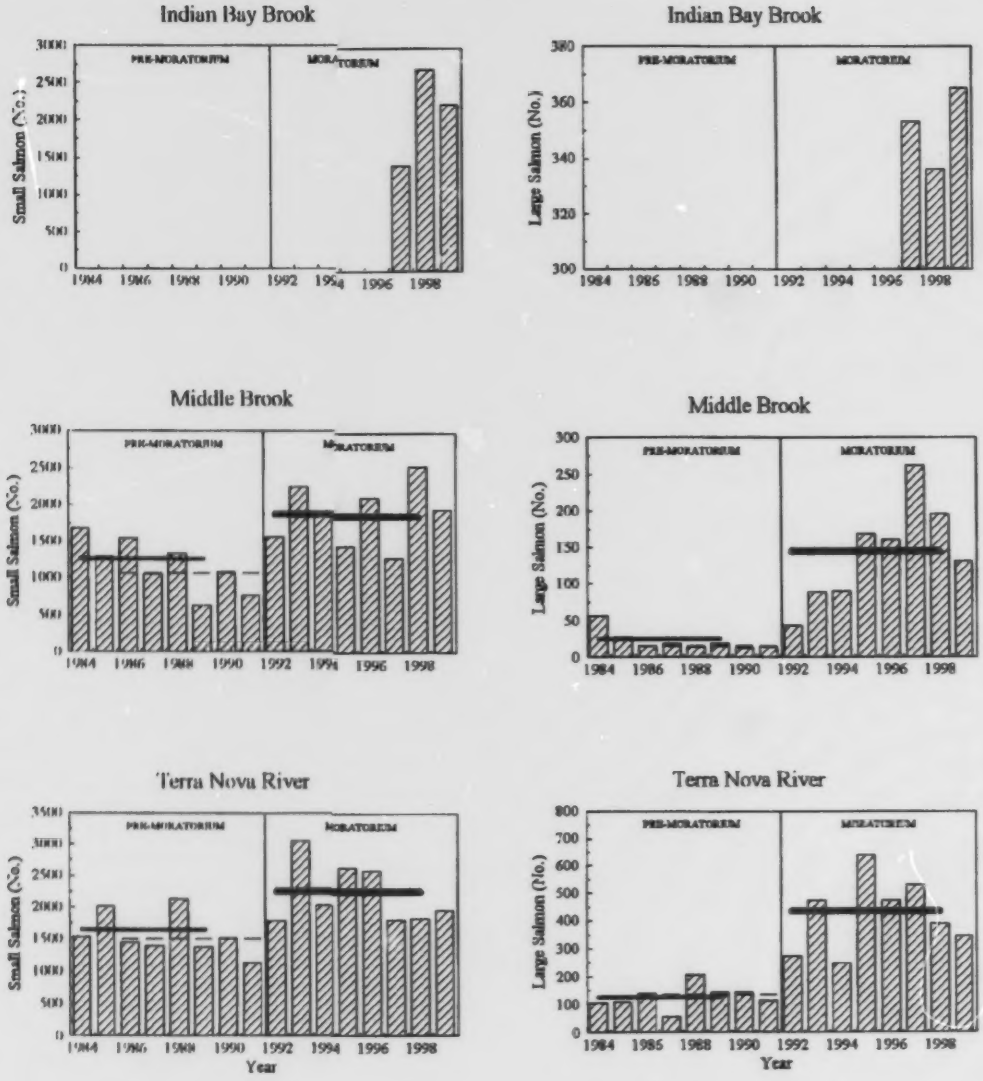

Fig. 22. Total returns of small and large salmon to Indian Bay Brook, Middle Brook, and Terra Nova River (SFA 5), 1984-99. The thin solid horizontal line represents the 1984-89 mean, the broken line the 1986-91 mean, and the thick solid line the 1992-98 mean.

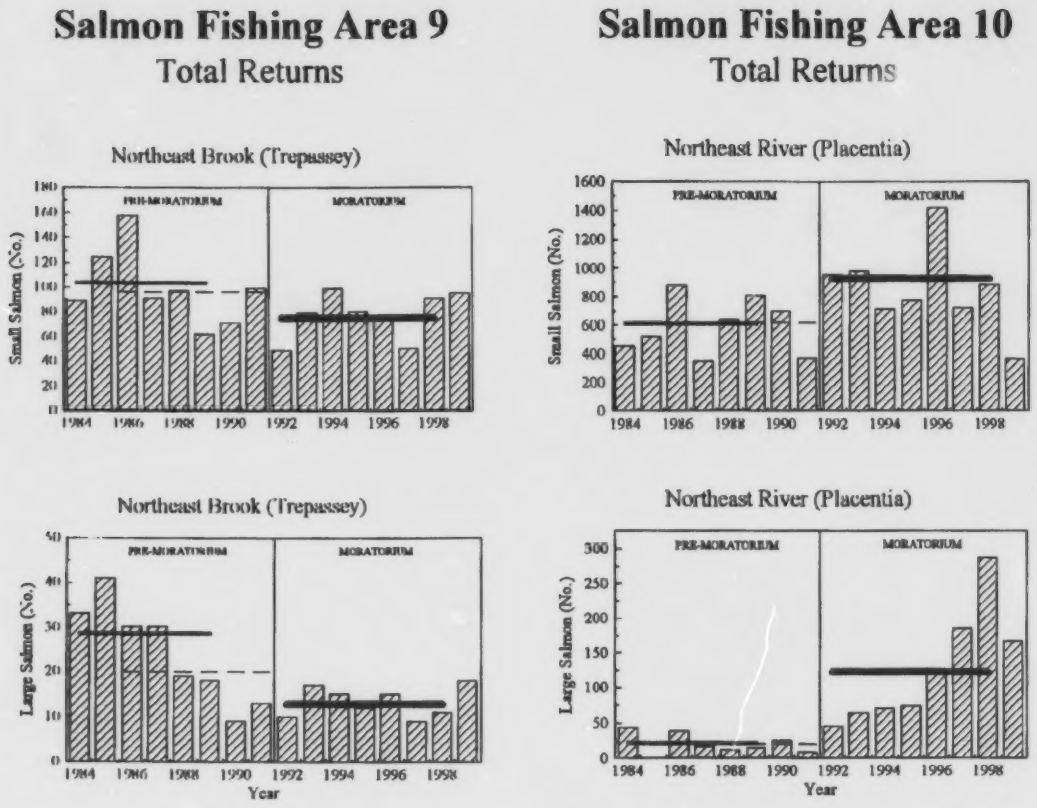

Fig. 23. Total returns of small and large salmon to Northeast Brook,Trepassey (SFA 9), and Northeast River, Placentia (SFA 10), 1984-99. The thin solid horizontal line represents the 1984-89 mean, the broken line the 1986-91 mean, and the thick solid line the 1992-98 mean.

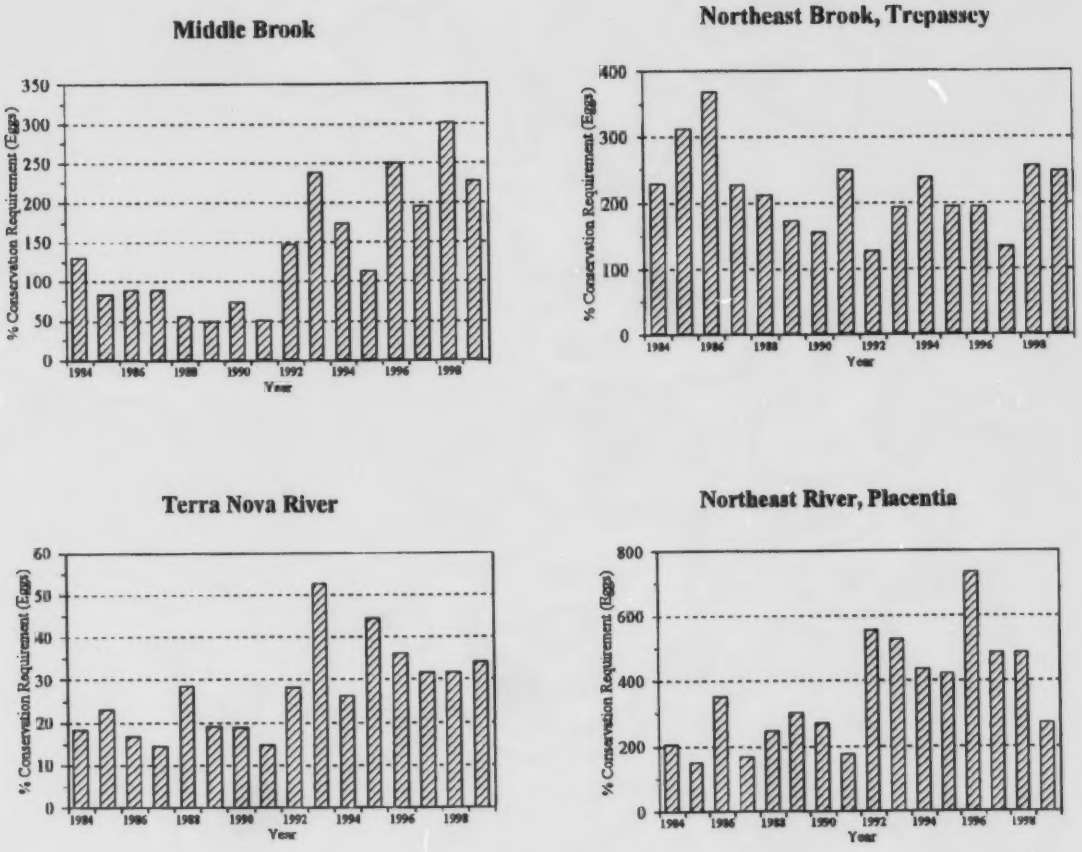

Fig. 24. Percentage conservation egg requirement achieved for Middle Brook and Terra Nova River (SFA 5), Northeast Brook, Trepassey (SFA 9) and Northeast River, Placentia (SFA 10), 1984-99.

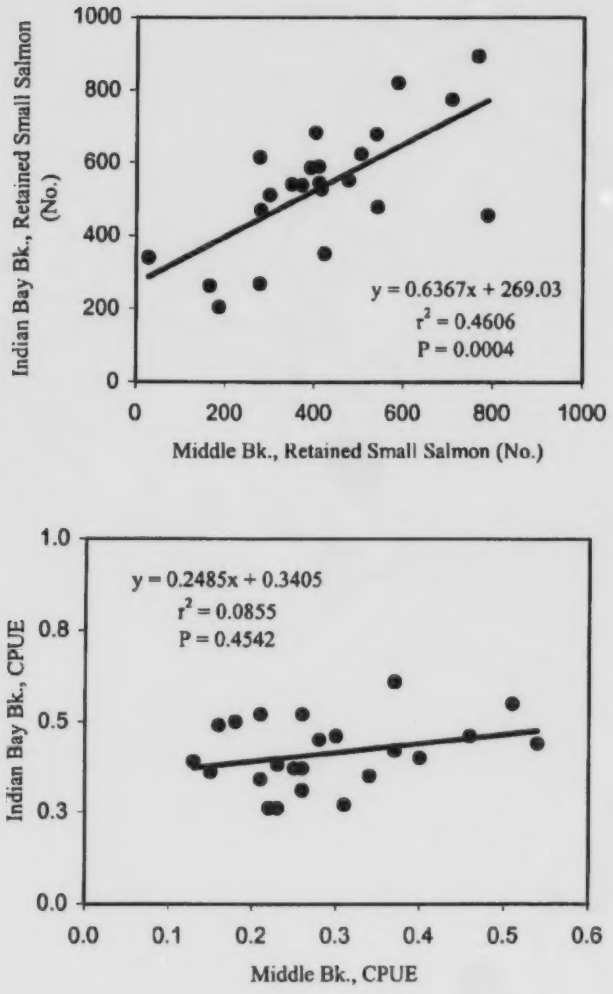

Fig. 25. Regression of the number of small salmon retained in the recreational fishery in Indian Bay Brook on the number retained in Middle Brook, 1974-96 (upper panel) and CPUE for Indian Bay Brook on CPUE for Middle Brook, 1974-96 (lower panel).

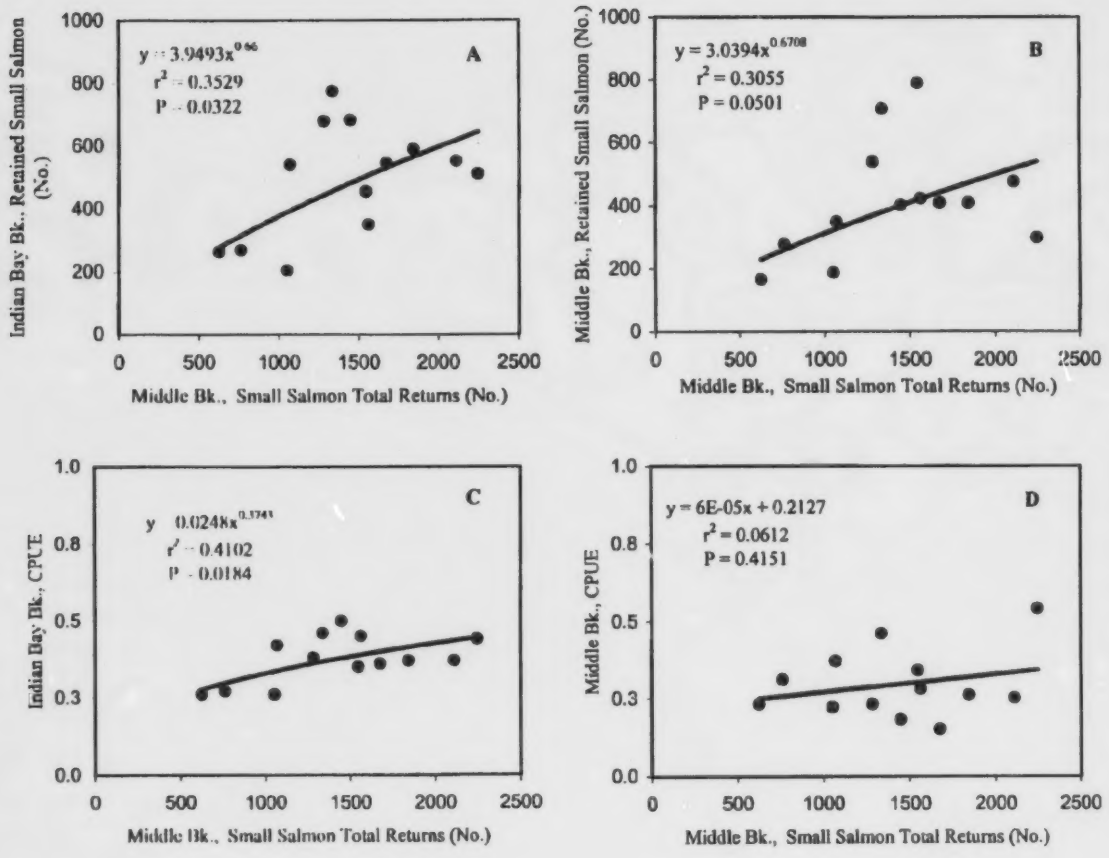

Fig. 26. Regression of number of small salmon retained in the recreational fishery in Indian Bay Brook (A), number of small salmon retained in Middle Brook (B), CPUE for Indian Bay Brook (C), and CPUE for Middle Brook (D) on total returns of small salmon to Middle Brook, 1984-96.

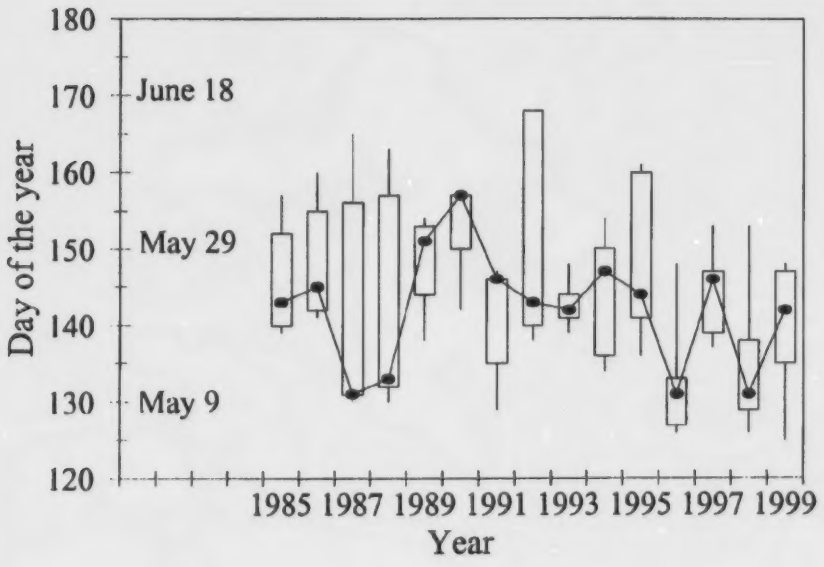

Fig. 27. Annual variation in smolt run timing for Northeast Brook, Trepassey, 1985-99. Vertical lines represent the 10th and 90th percentiles, rectangles are the 25th and 75th percentiles, and the point within each rectangle is the median.

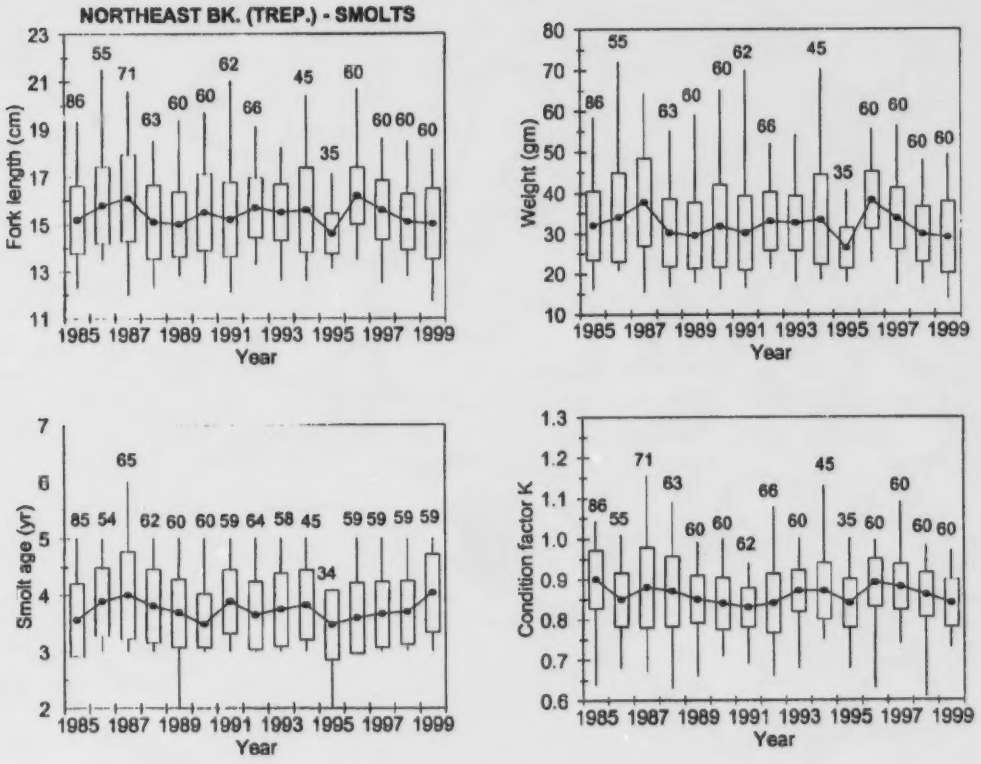

Fig. 28. Mean fork length, mean weight, mean smolt age, and mean condition factor for smolts from Northeast Brook, Trepassey, 1985-99. The rectangle around each point denotes the standard deviation; the vertical line is the range; the number above the vertical line is the sample size.

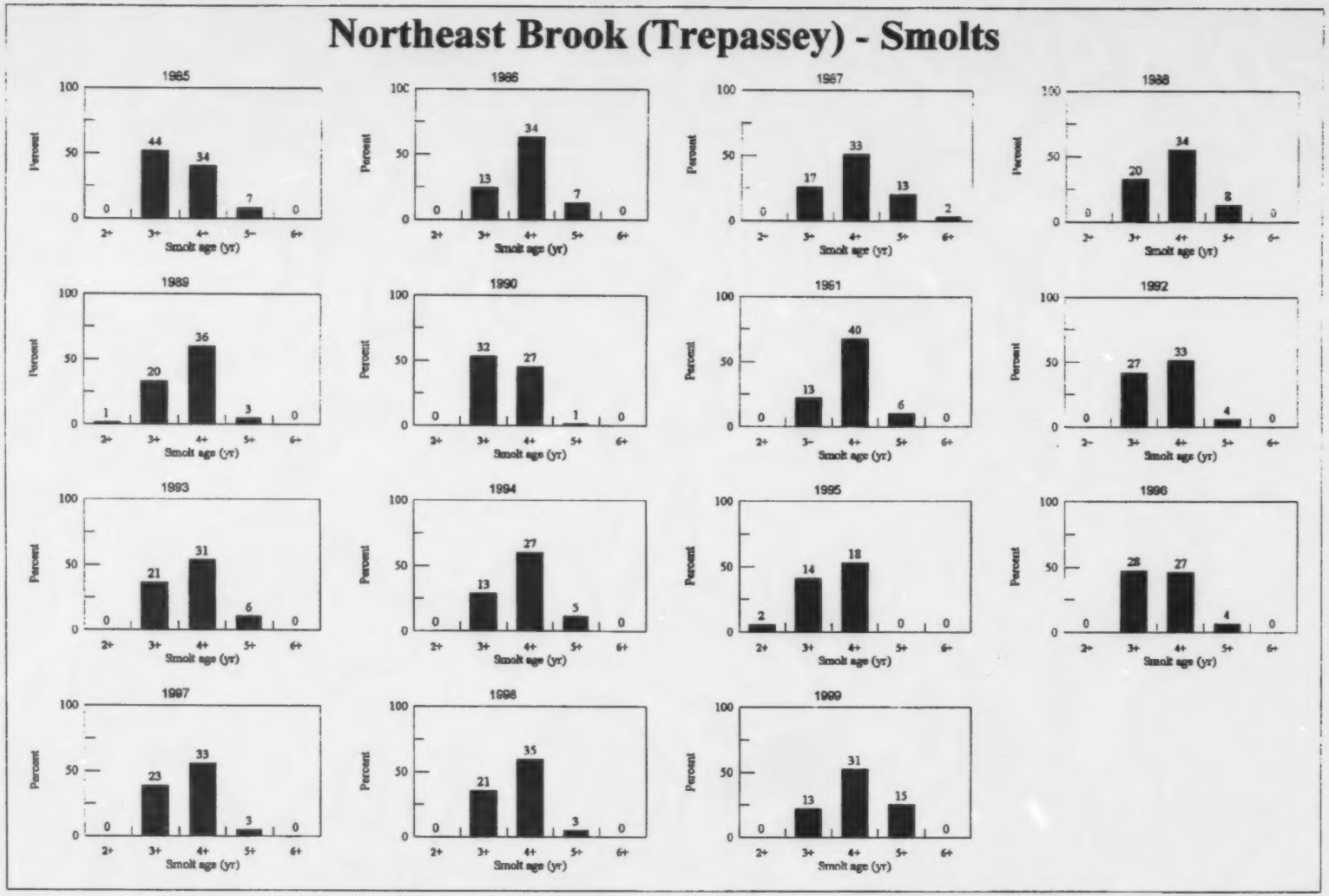

Fig. 29. Age composition for smolts from Northeast Brook, Trepassey, 1985 - 99. The number above each bar denotes sample size.

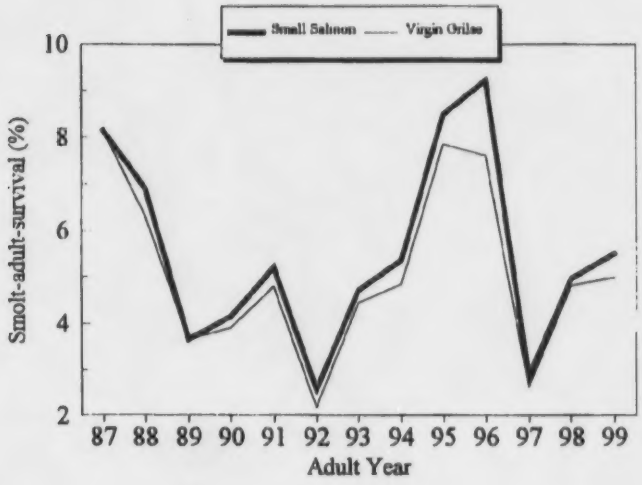

Fig. 30. Atlantic salmon smolt-to-adult survival (back to the river) in terms of small salmon and virgin grilse for Northeast Brook, Trepassey (SFA 9).

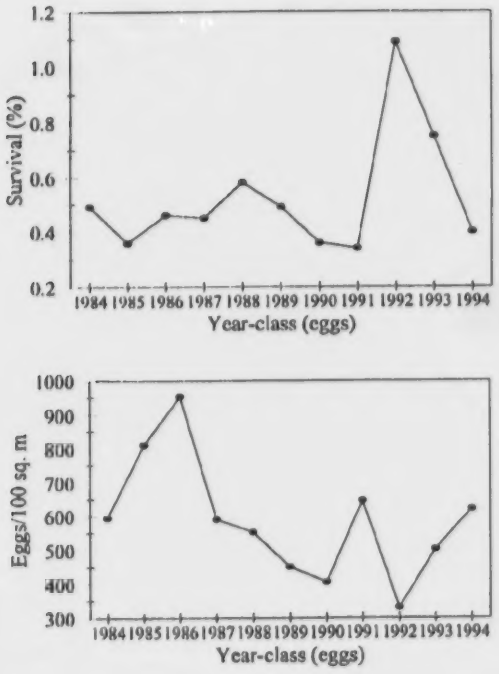

Fig. 31. Egg-to-smolt survival and egg deposition rate for Northeast Brook, Trepassey.

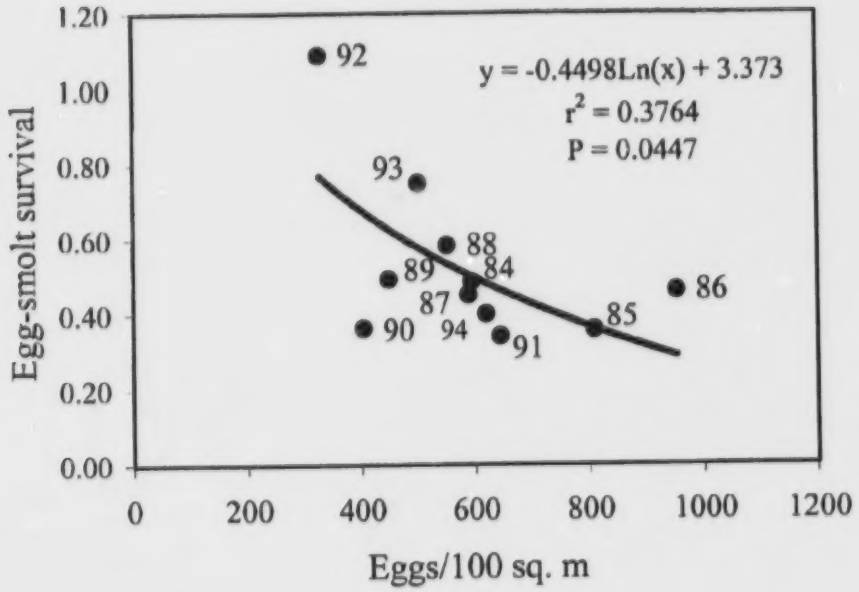

Fig. 32. Relationship between egg-to-smolt survival and egg deposition for Northeast Brook, Trepassey.

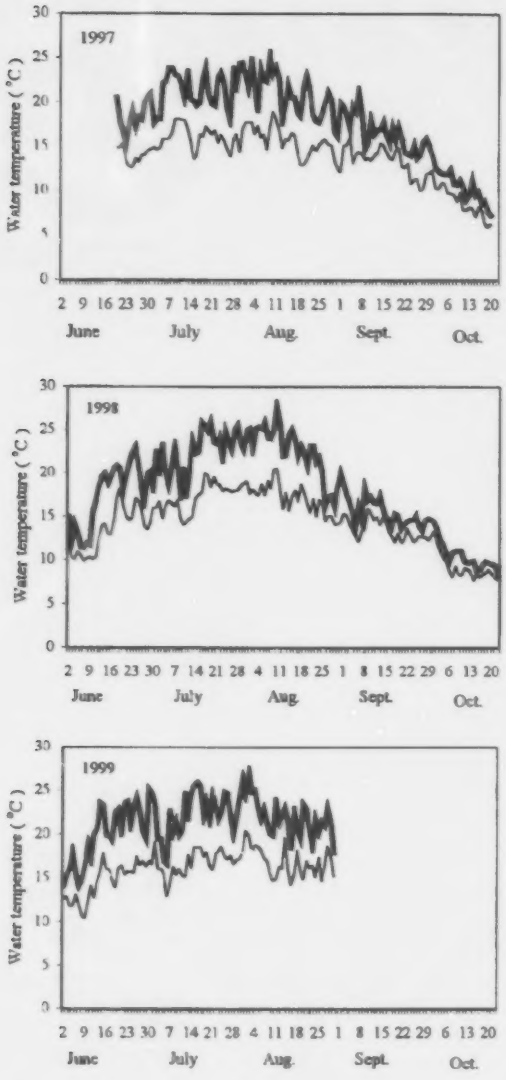

Fig. 33. Maximum and minimum water temperatures (°C) measured at the counting fence in Indian Bay Brook, 1997-99.

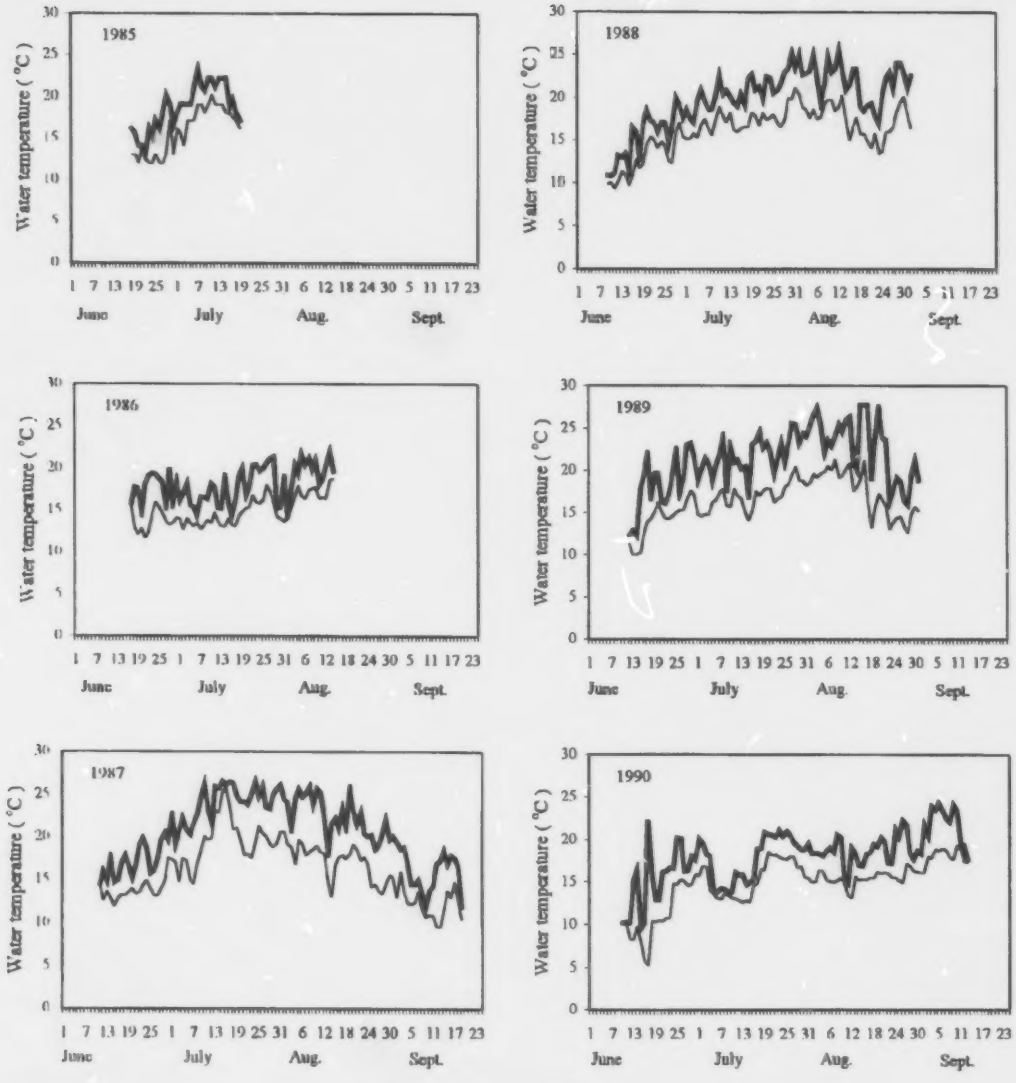

Fig. 34. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook, 1985-99.

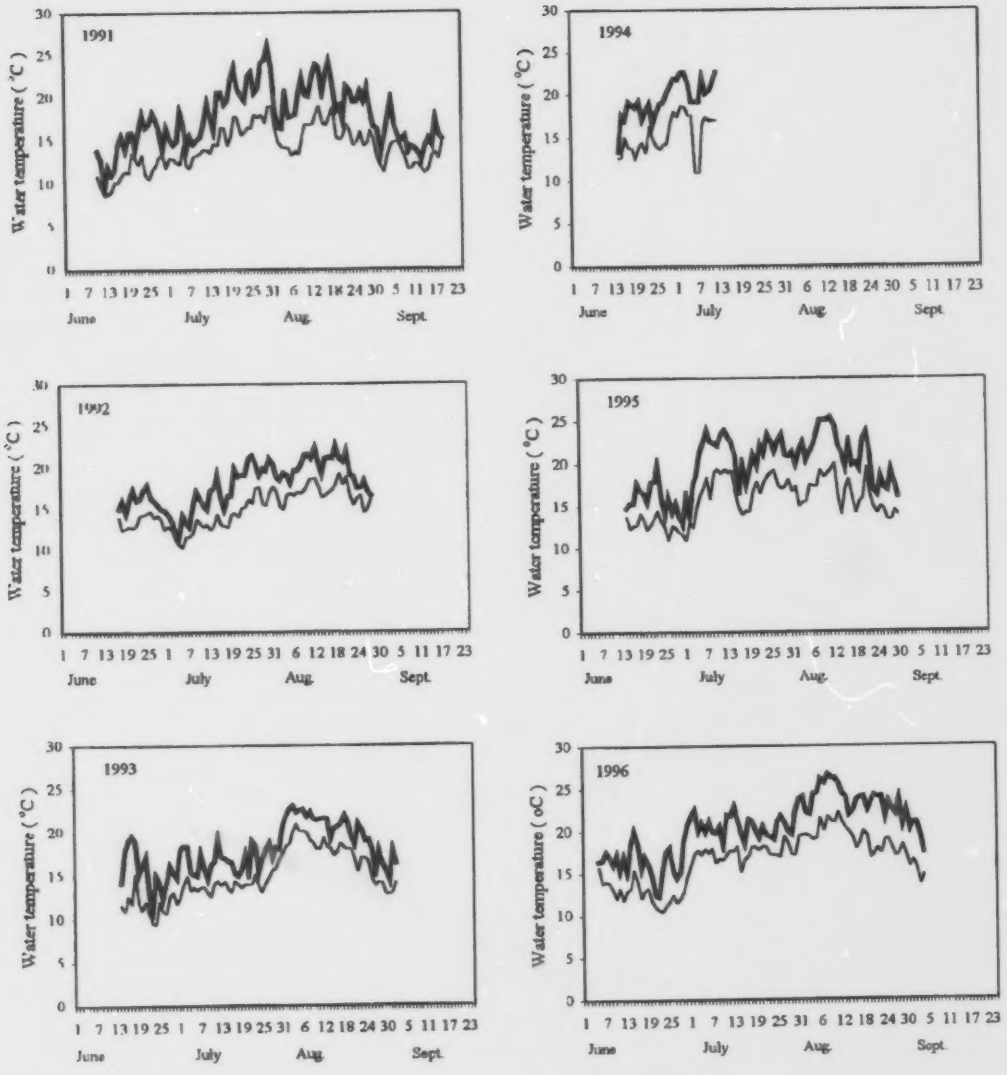
1991
1994
1992
1995
1993
1996
Water temperature (°C)
Water temperature (oC)
0 5 10 15 20 25 30
1 7 13 19 25 1 7 13 19 25 31 6 12 18 24 30 5 11 17 23
June
July
Aug.
Sept.

Fig. 34 (cont'd)

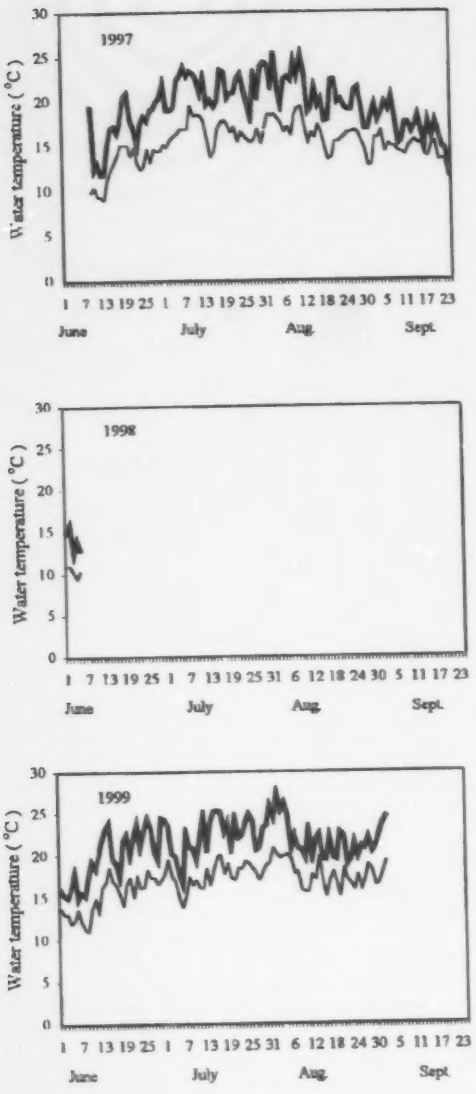
1997
1998
1999
Water temperature (°C)
0
5
10
15
20
25
30
1 7 13 19 25 1 7 13 19 25 31 6 12 18 24 30 5 11 17 23
June
July
Aug.
Sept.

Fig. 34 (cont'd)

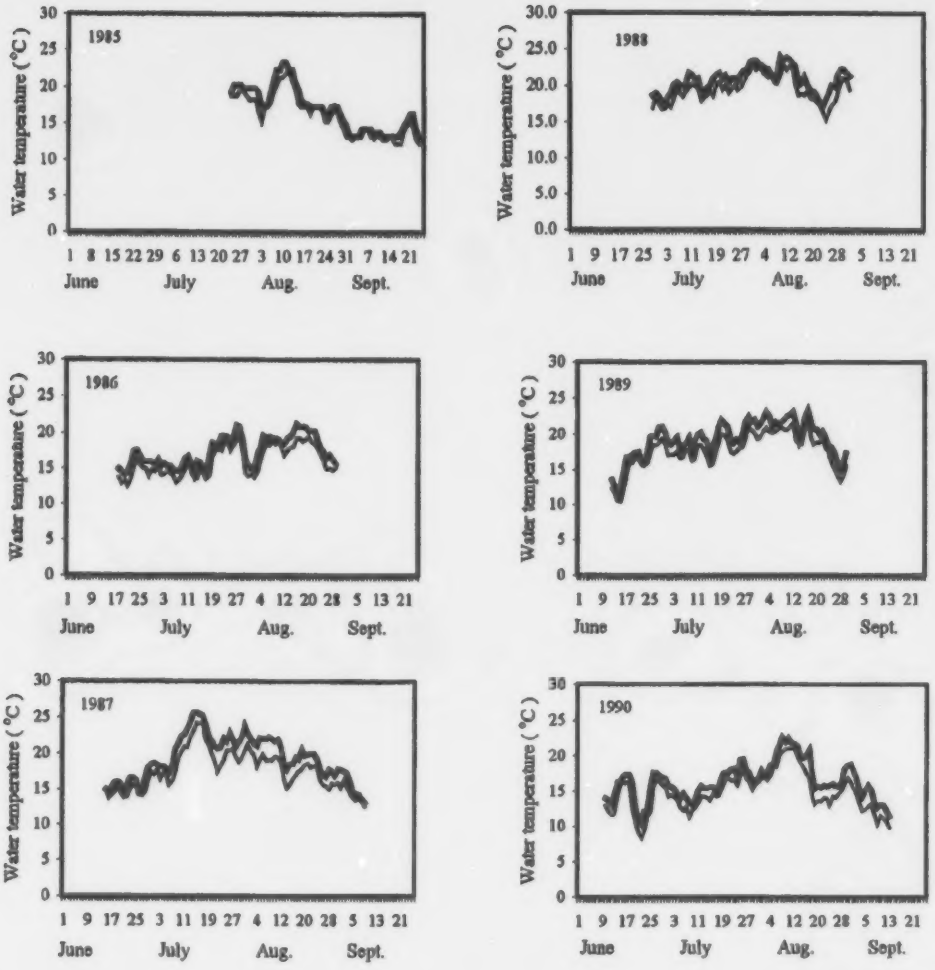

Fig. 35. Maximum and minimum water temperatures (°C) measured at the fishway in Lower Terra Nova River, 1985-99.

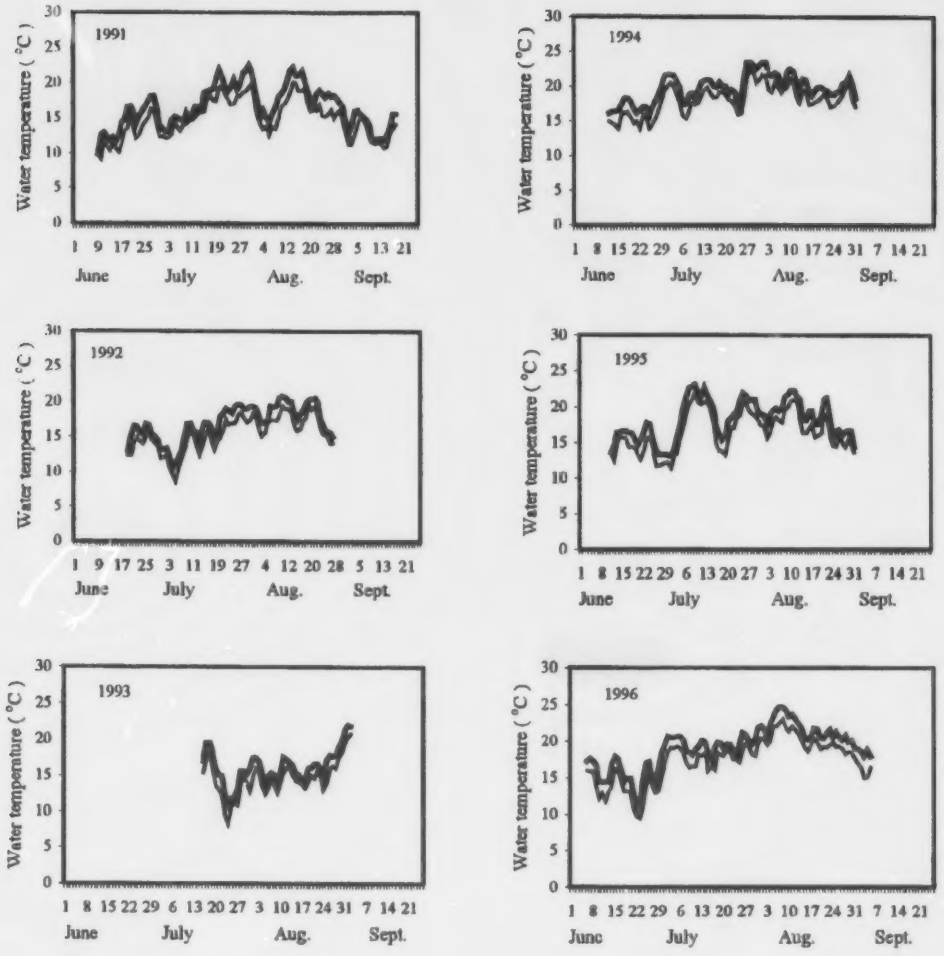
1991
1994
1992
1995
1993
1996
Water temperature (°C)
0 5 10 15 20 25 30
1 9 17 25 3 11 19 27 4 12 20 28 5 13 21
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June
July
Aug.
Sept.

Fig. 35 (cont'd)

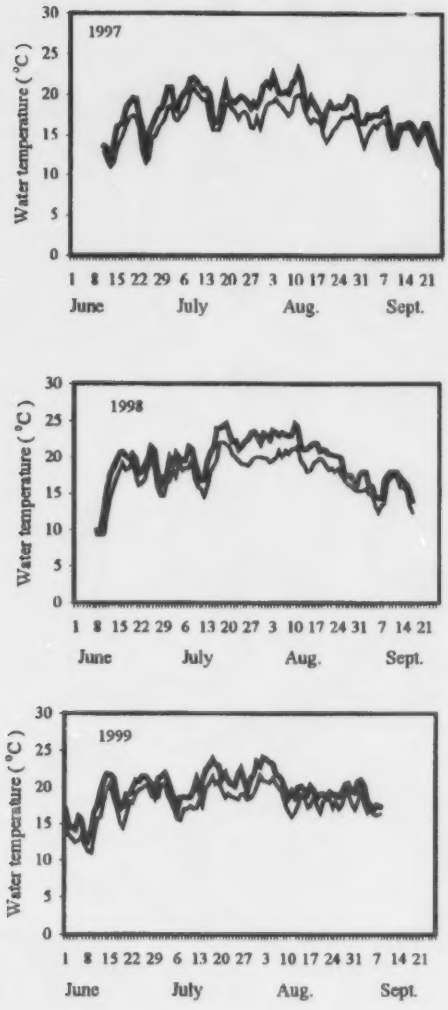
1997
Water temperature (°C)
30
25
20
15
10
5
0
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June
July
Aug.
Sept.
1998
Water temperature (°C)
30
25
20
15
10
5
0
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June
July
Aug.
Sept.
1999
Water temperature (°C)
30
25
20
15
10
5
0
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June
July
Aug.
Sept.

Fig. 35 (cont'd)

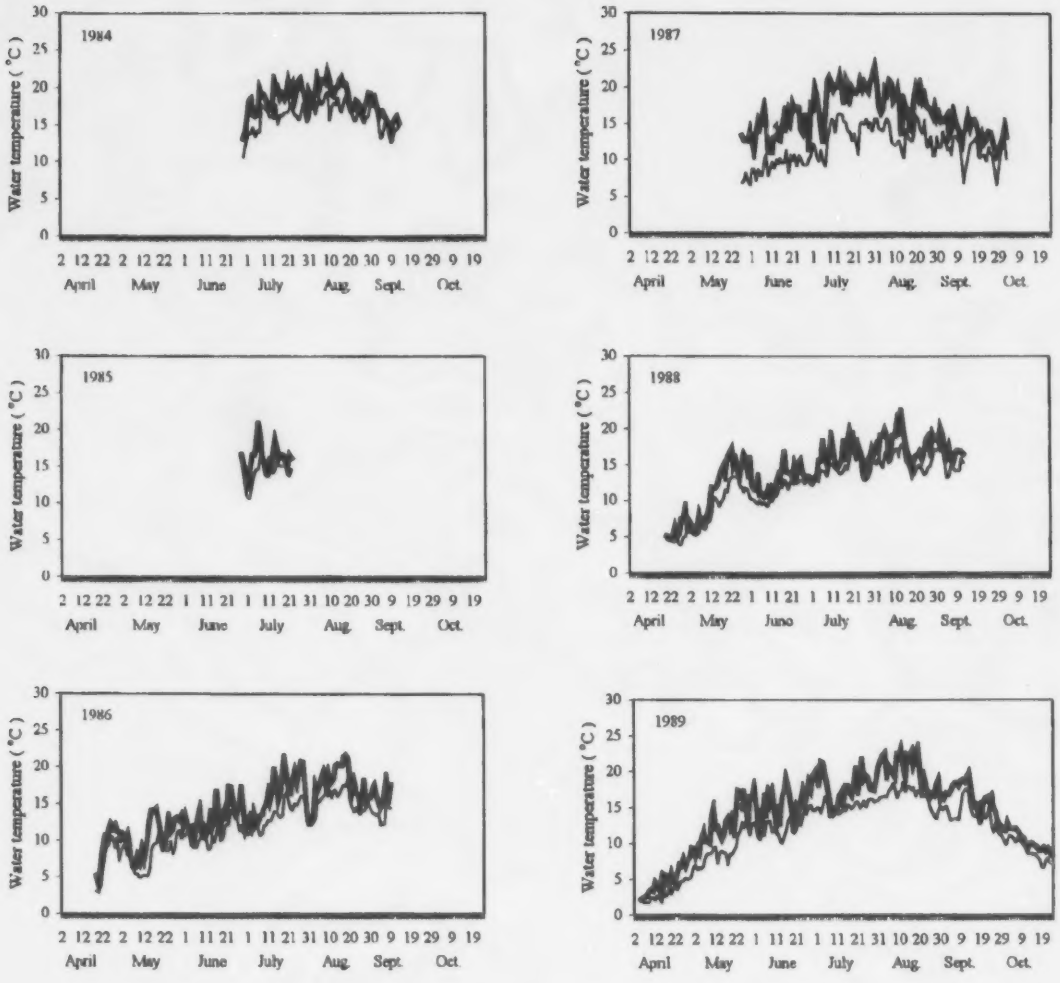

Fig. 36. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey, 1984-99.

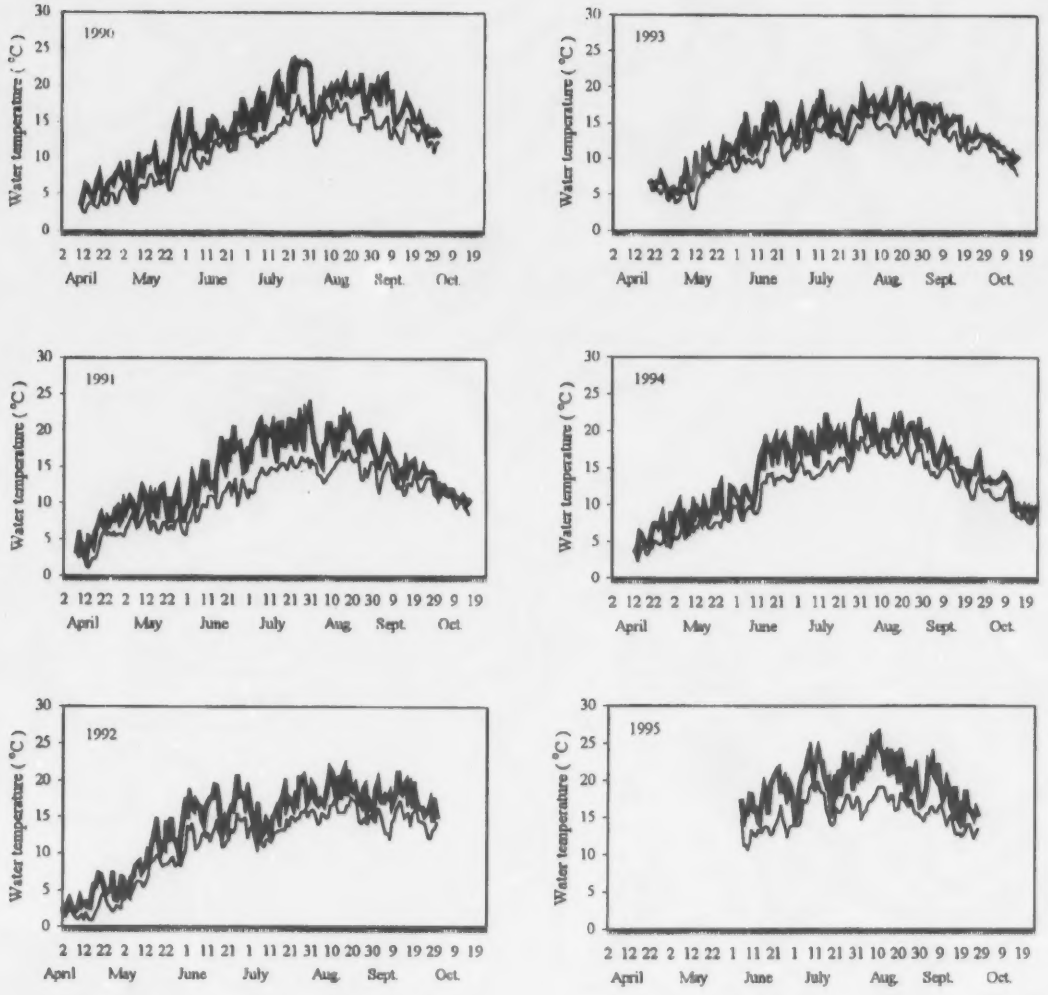
1990
1993
1991
1994
1992
1995
Water temperature (°C)
0 5 10 15 20 25 30
2 12 22 2 12 22 1 11 21 1 11 21 31 10 20 30 9 19 29 9 19
April May June July Aug. Sept. Oct.

Fig. 36 (cont'd)

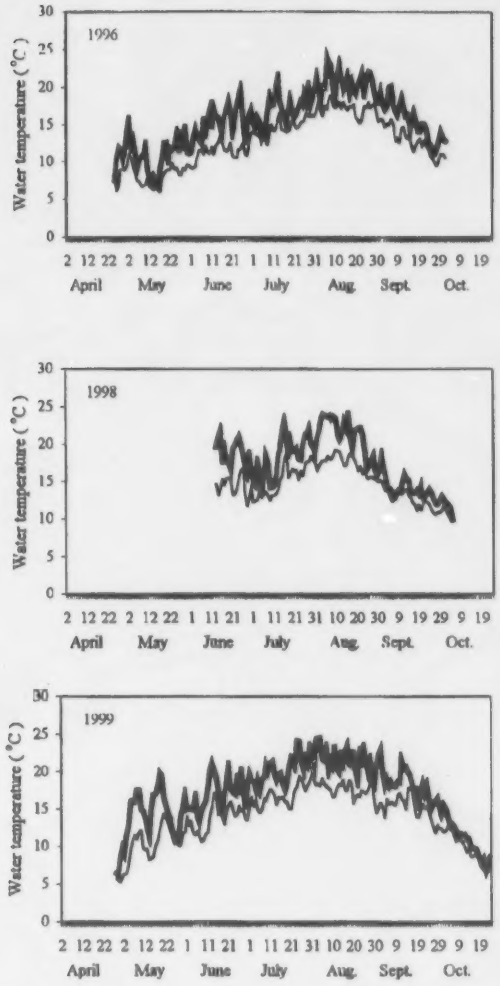
1996
1998
1999
Water temperature (°C)
0
5
10
15
20
25
30
2 12 22 2 12 22 1 11 21 1 11 21 31 10 20 30 9 19 29 9 19
April
May
June
July
Aug.
Sept.
Oct.

Fig. 36 (cont'd)

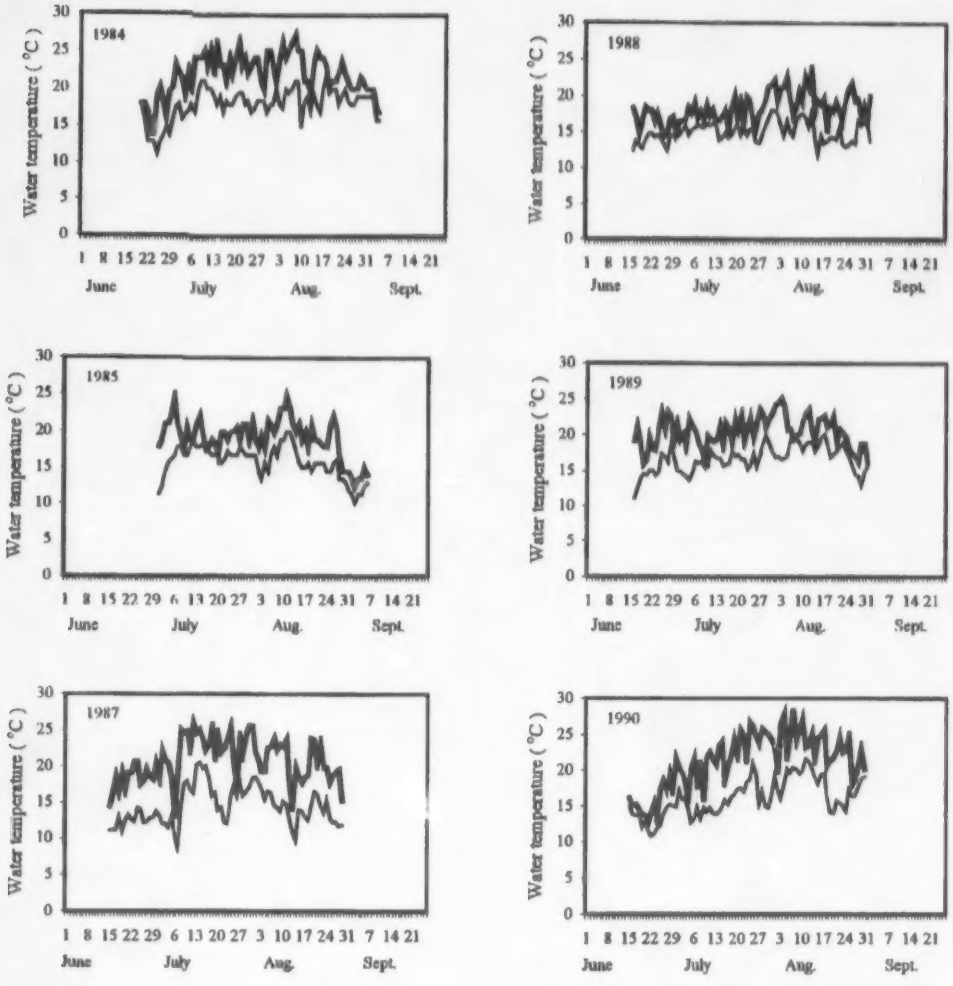

Fig. 37. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia, 1985-99.

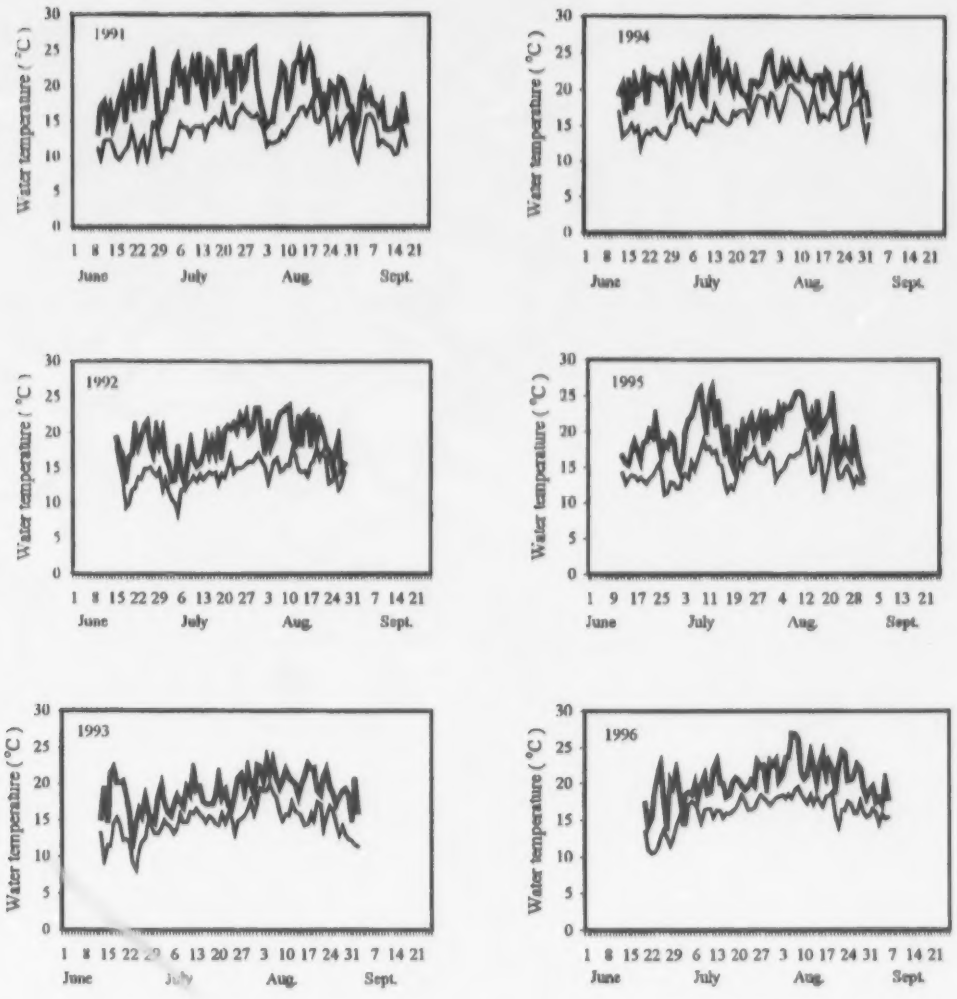
1991
1994
1992
1995
1993
1996
Water temperature (°C)
0 5 10 15 20 25 30
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June July Aug. Sept.
1 9 17 25 3 11 19 27 4 12 20 28 5 13 21

Fig. 37 (cont'd)

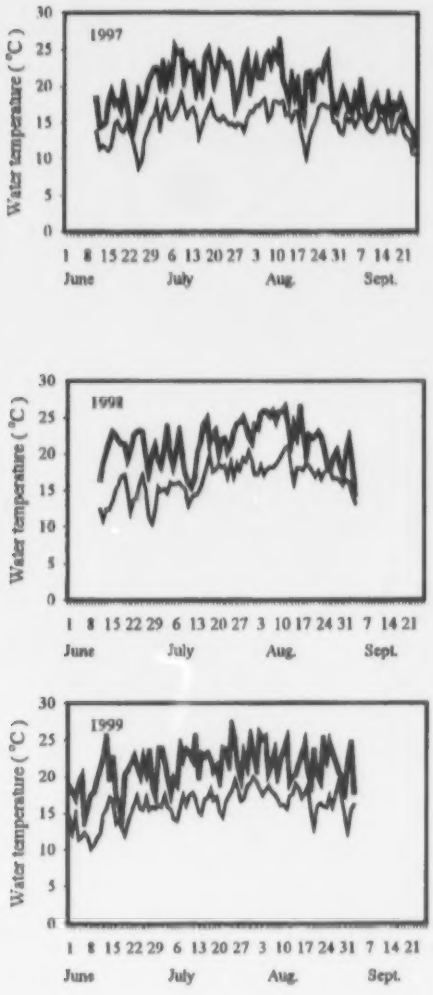
1997
1998
1999
Water temperature (°C)
30
25
20
15
10
5
0
1 8 15 22 29 6 13 20 27 3 10 17 24 31 7 14 21
June
July
Aug.
Sept.

Fig. 37 (cont'd)

INDIAN BAY BROOK
SFA 5

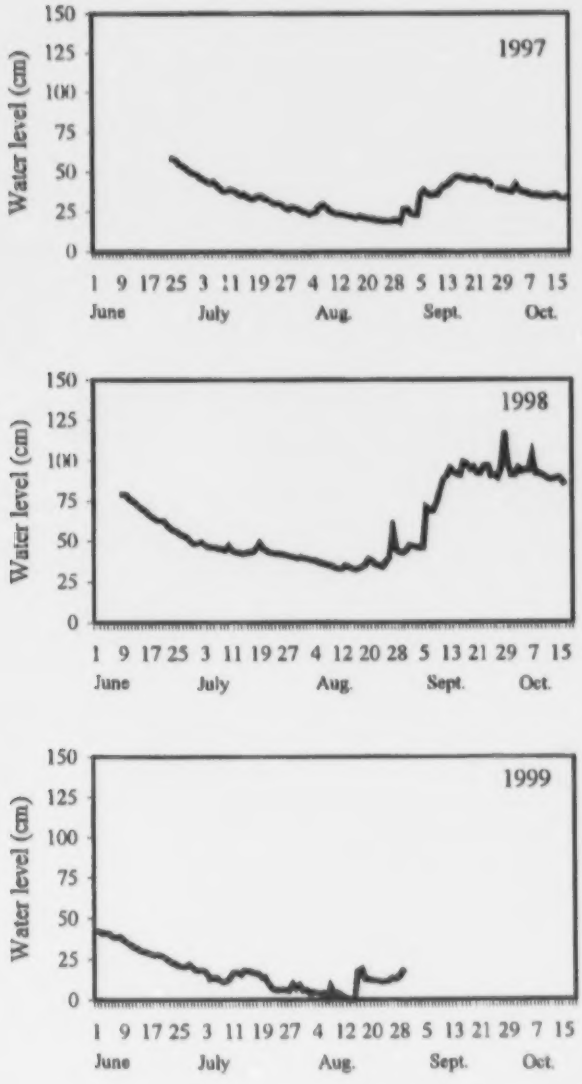

Fig. 38. Mean daily water levels measured near the counting fence in Indian Bay Brook, 1997-99.

MIDDLE BROOK
SFA 5

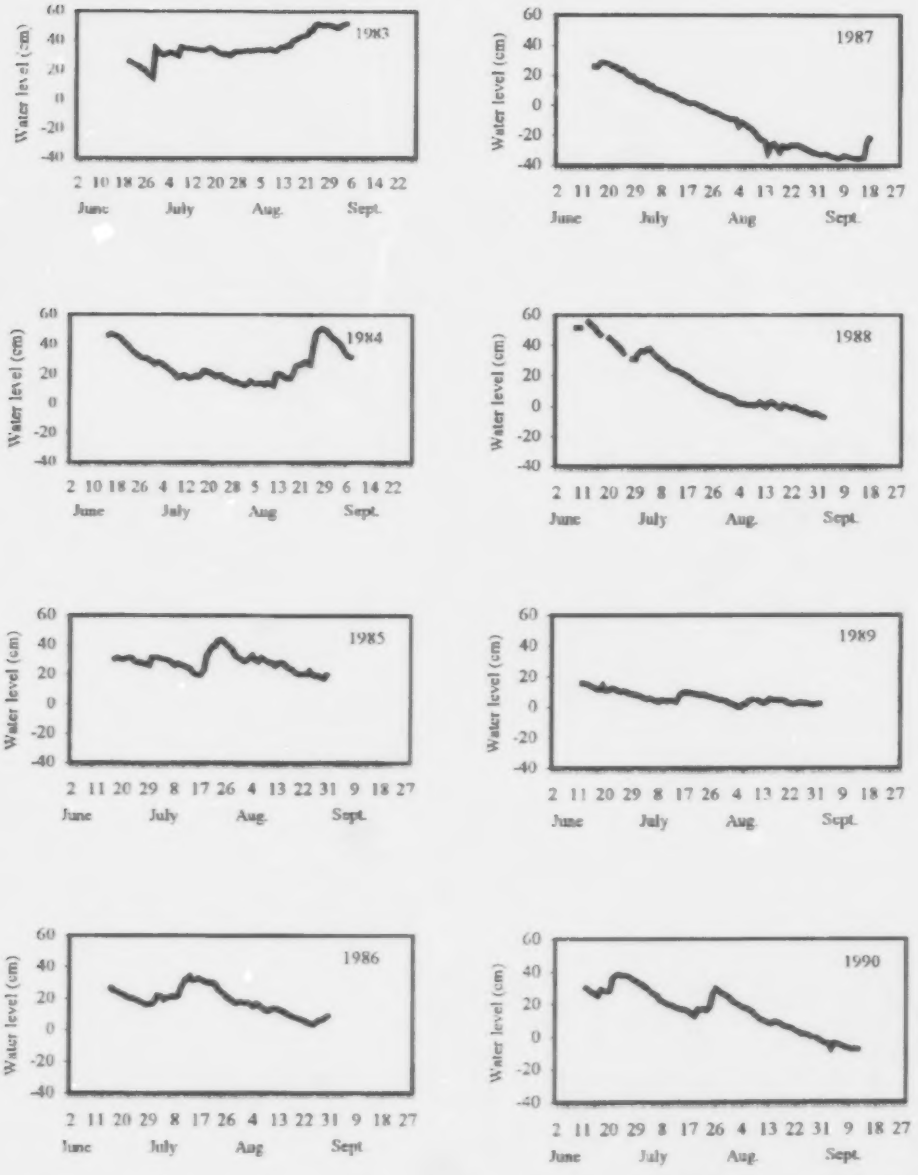

Fig. 39 Mean daily water levels (cm) measured near the fishway in Middle Brook, 1983-99.

MIDDLE BROOK
SFA 5

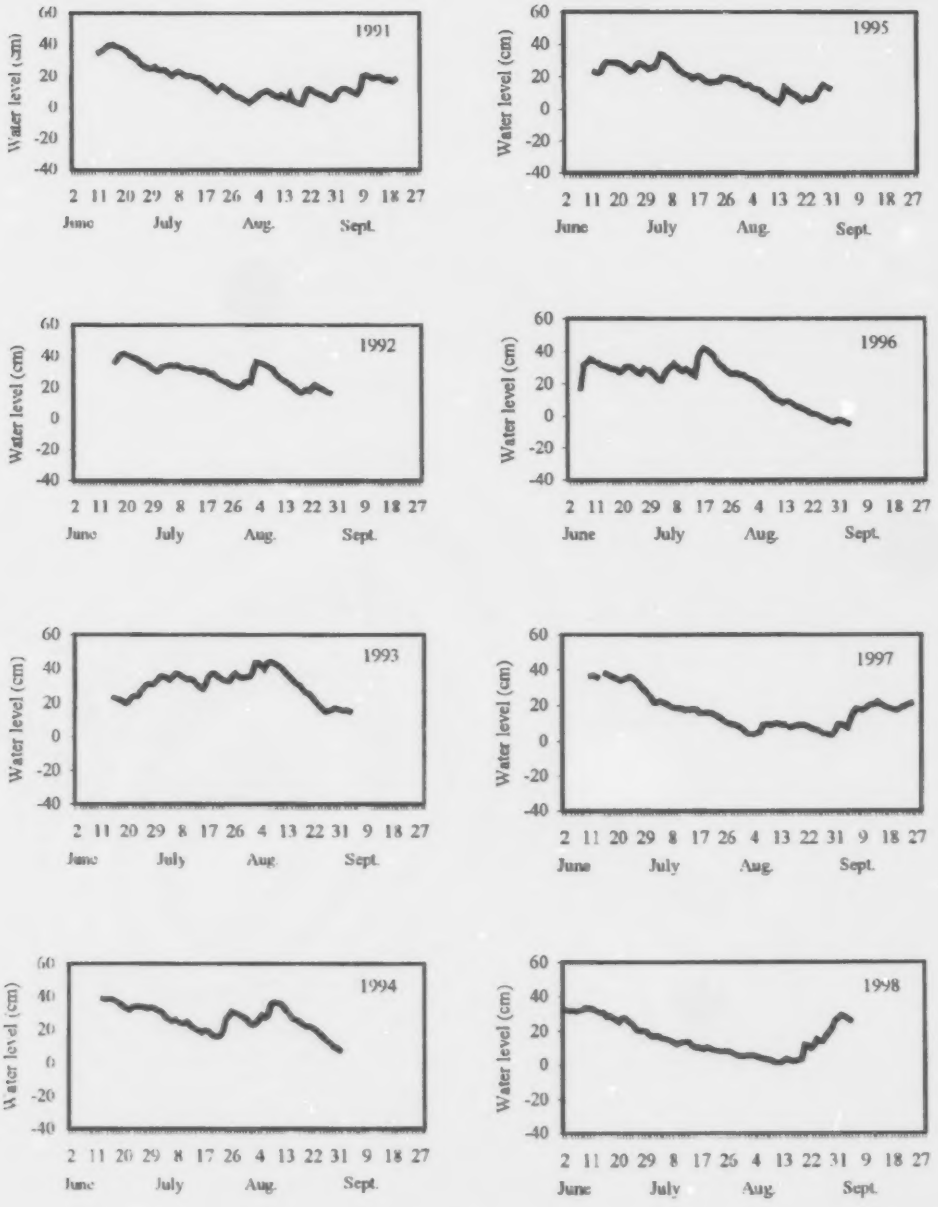

Fig. 39 (cont'd)

MIDDLE BROOK
SFA 5

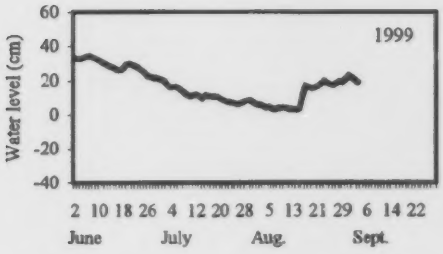

Fig. 39 (cont'd)

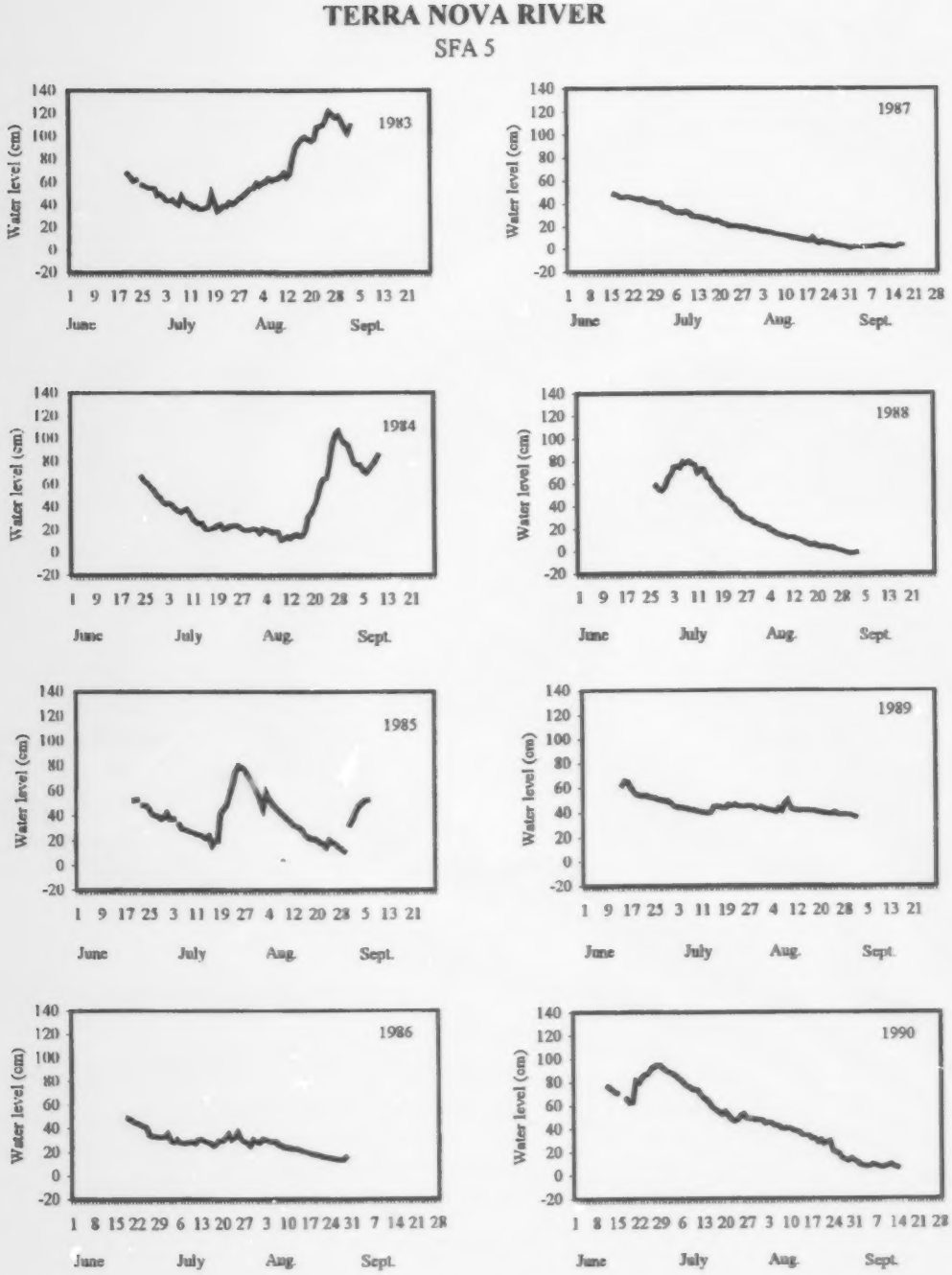

Fig. 40. Mean daily water levels (cm) measured near the fishway in Lower Terra Nova River, 1983-99.

TERRA NOVA RIVER

SFA 5

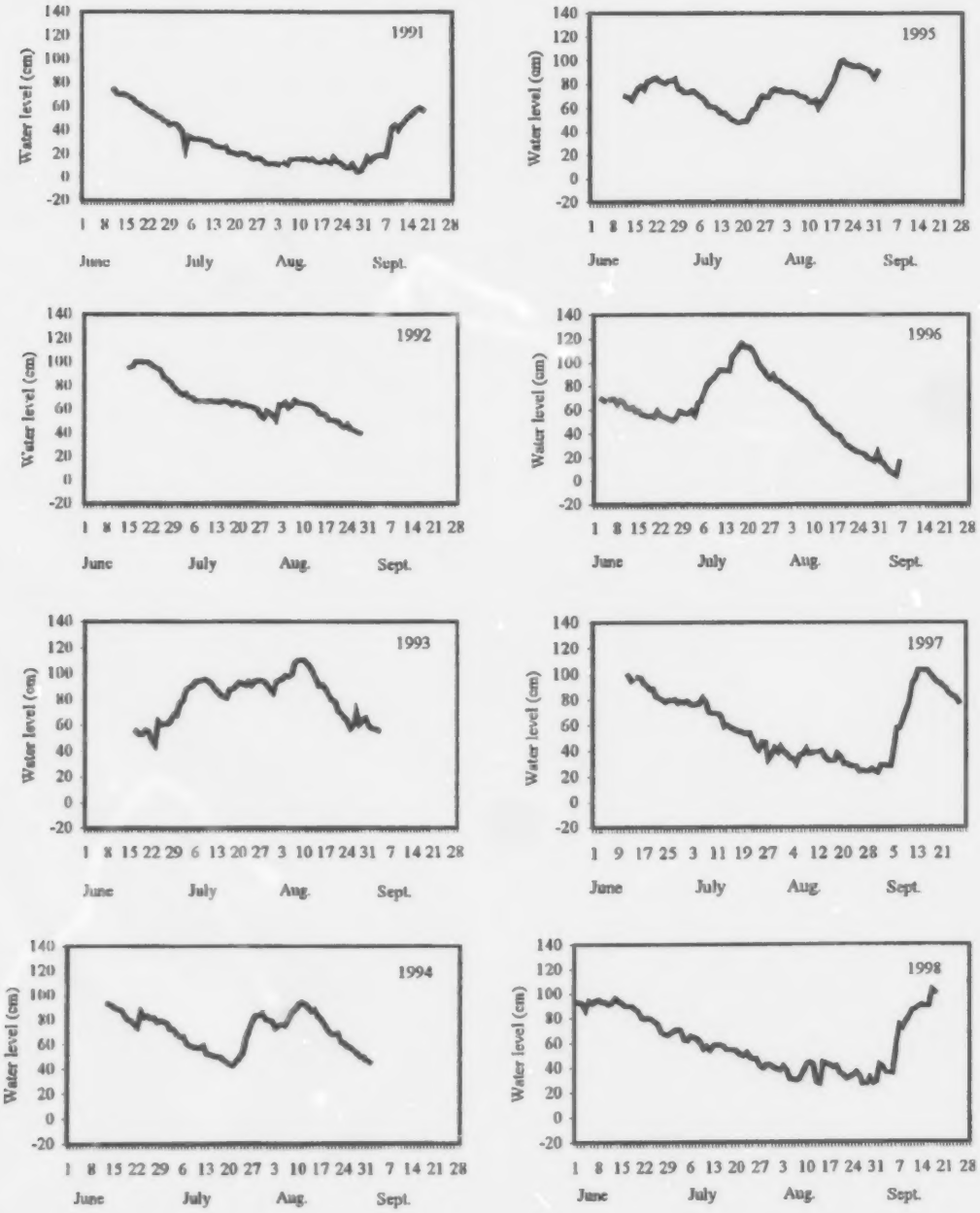

Fig. 40 (cont'd)

TERRA NOVA RIVER

SFA 5

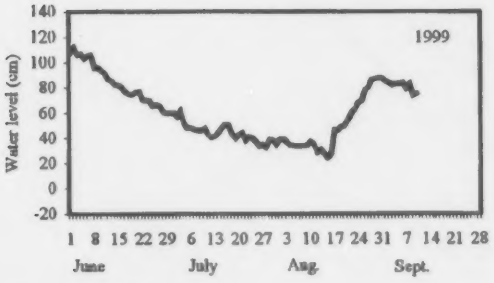

Fig. 40 (cont'd)

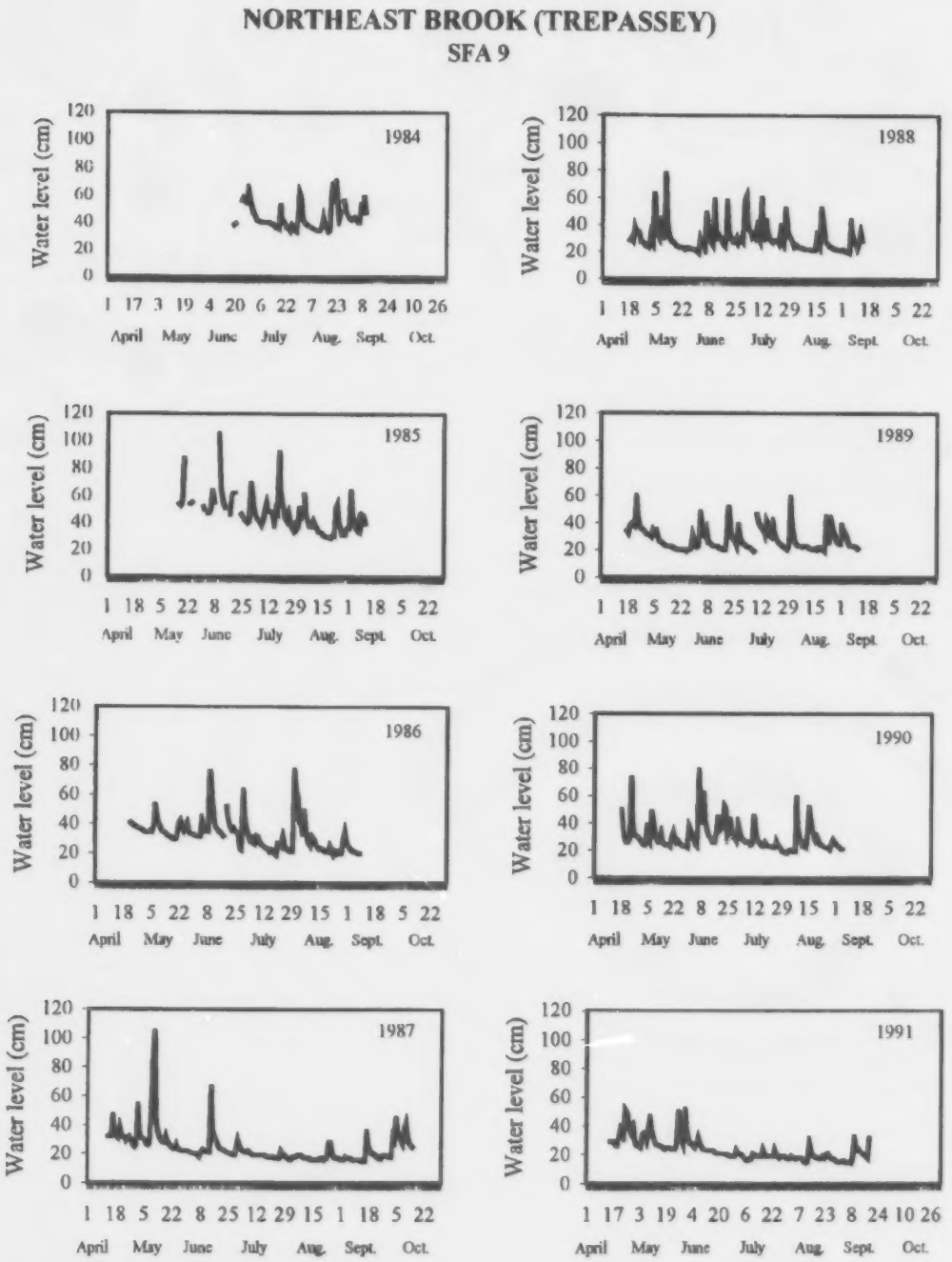

Fig. 41. Mean daily water levels (cm) measured near the counting fence in Northeast Brook (Trepassey), 1984-99.

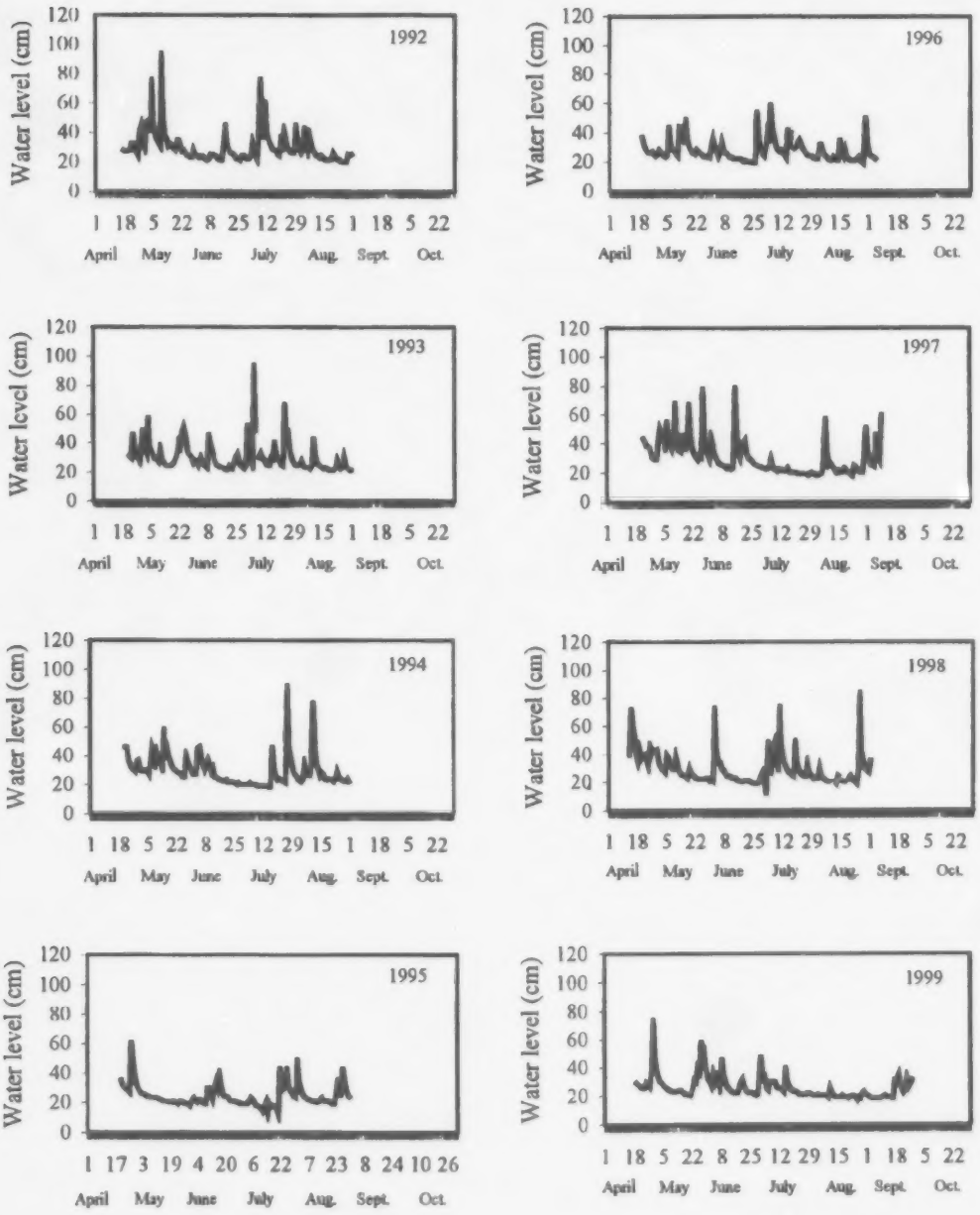
NORTHEAST BROOK (TREPASSEY)
SFA 9
Water level (cm)
120
100
80
60
40
20
0
1992
1996
1993
1997
1994
1998
1995
1999
1 18 5 22 8 25 12 29 15 1 18 5 22
1 17 3 19 4 20 6 22 7 23 8 24 10 26
April May June July Aug. Sept. Oct.

Fig. 41 (cont'd)

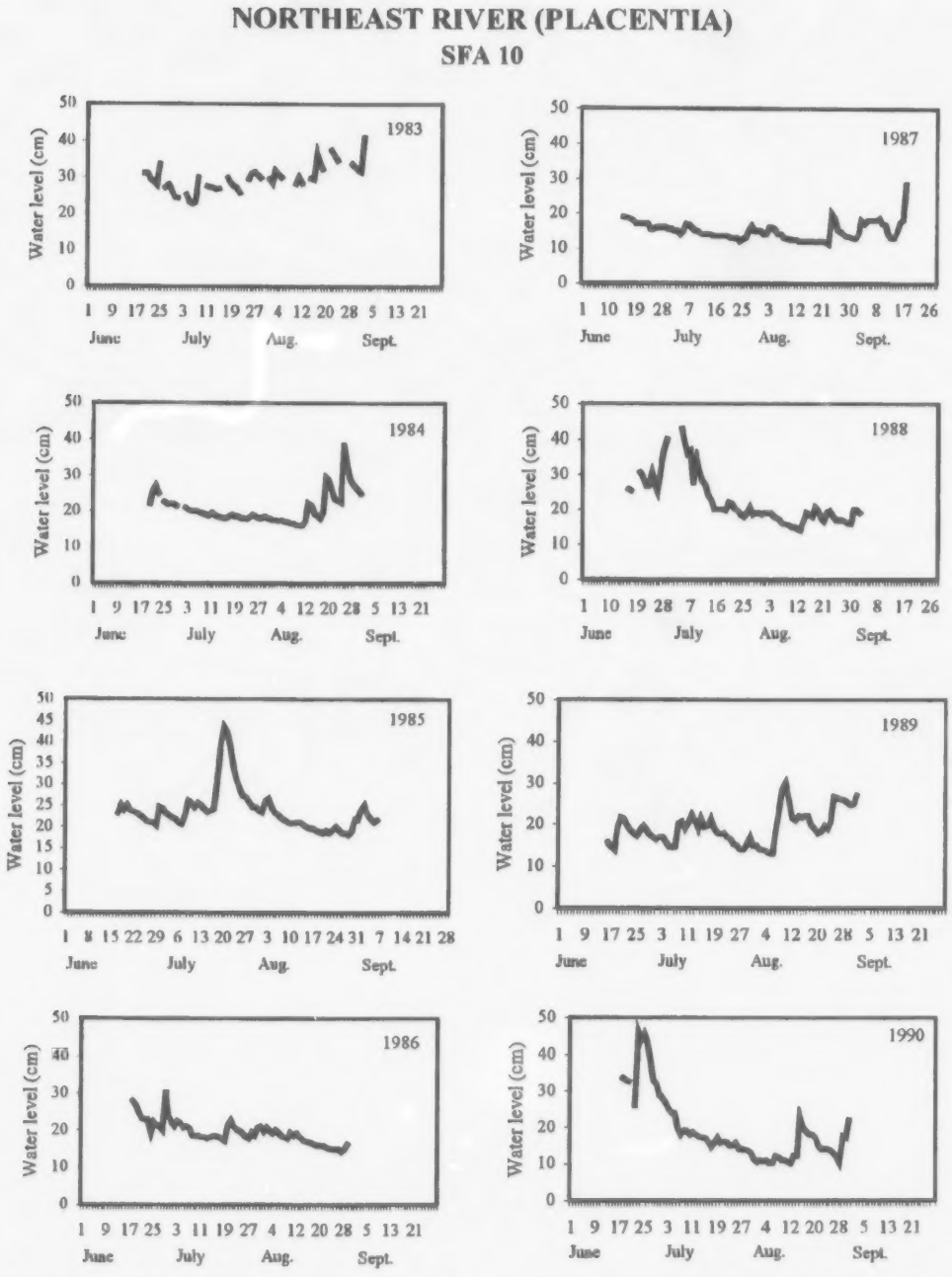

Fig. 42. Mean daily water levels (cm) measured near the fishway in Northeast River (Placentia), 1983-99.

NORTHEAST RIVER (PLACENTIA)
SFA 10

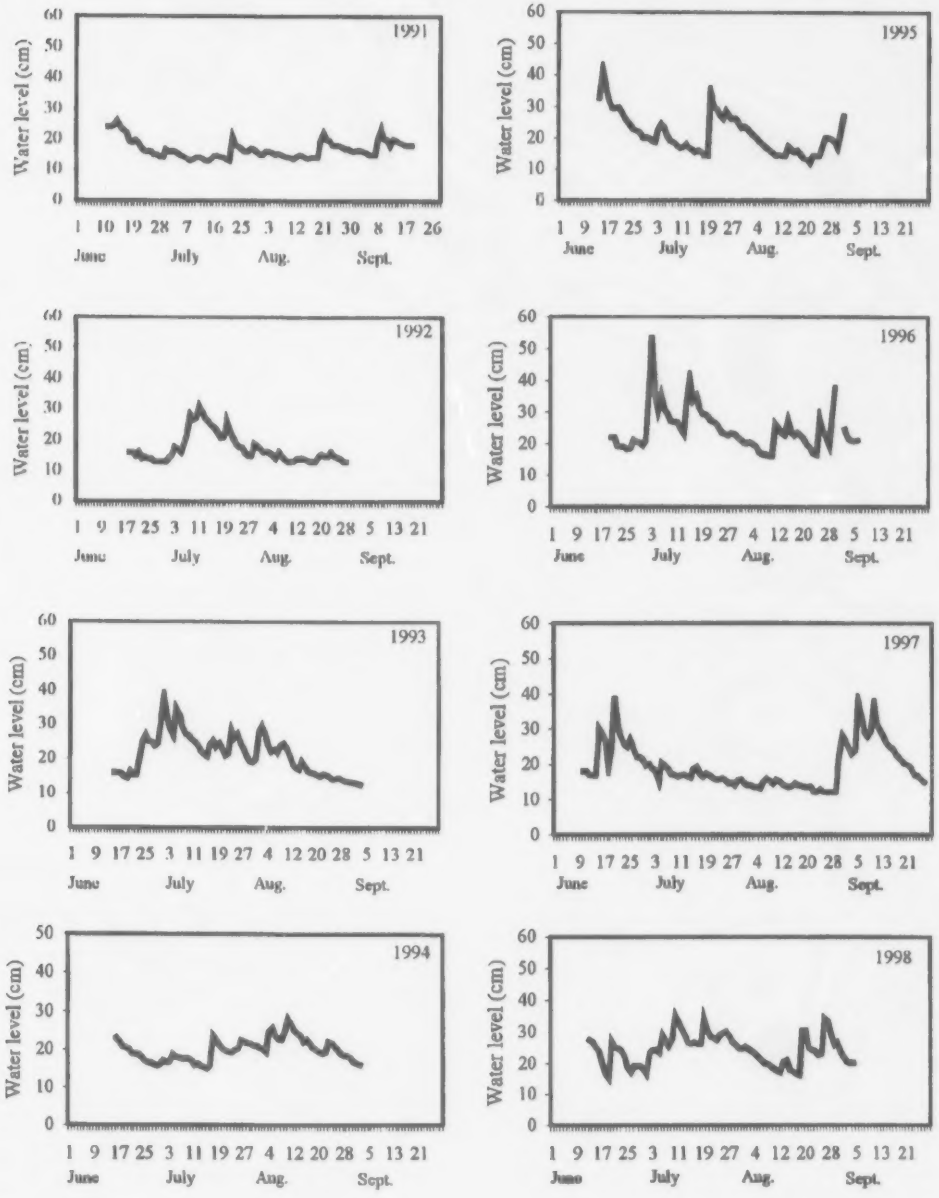

Fig. 42 (cont'd)

NORTHEAST RIVER (PLACENTIA)
SFA 10

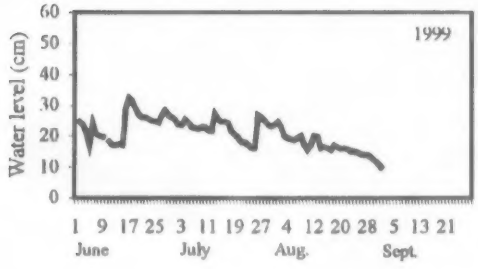

Fig. 42 (cont'd)

Appendix 1. Atlantic salmon recreational fishery catch and effort data for Indian Bay Brook, Bonavista Bay (SFA 5), 1974-99. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>=63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1974	1259	614	.	614	0	.	0	614	.	614	0.49
1975	1013	527	.	527	4	.	4	531	.	531	0.52
1976	917	469	.	469	4	.	4	473	.	473	0.52
1977	1636	893	.	893	6	.	6	899	.	899	0.55
1978	1285	585	.	586	1	.	1	587	.	587	0.46
1979	878	339	.	339	0	.	0	339	.	339	0.39
1980	1196	477	.	477	0	.	0	477	.	477	0.40
1981	1354	820	.	820	0	.	0	820	.	820	0.61
1982	1825	623	.	623	0	.	0	623	.	623	0.34
1983	1759	538	.	538	2	.	2	540	.	540	0.31
1984	1532	545	.	545	0	.	0	545	.	545	0.36
1985	1774	679	.	679	*	.	0	679	.	679	0.38
1986	1303	455	.	455	*	.	0	455	.	455	0.35
1987	772	204	.	204	*	.	0	204	.	204	0.26
1988	1690	774	.	774	*	.	0	774	.	774	0.46
1989	1010	263	.	263	*	.	0	263	.	263	0.26
1990	1298	540	.	540	*	.	0	540	.	540	0.42
1991	1000	268	.	268	*	.	0	268	.	268	0.27
1992	1026	350	110	460	*	1	1	350	111	461	0.45
1993	1663	510	225	735	*	0	0	510	225	735	0.44
1994	2080	589	171	760	*	1	1	589	172	761	0.37
1995	1937	683	288	971	*	0	0	683	288	971	0.50
1996	1580	551	36	587	*	0	0	551	36	587	0.37
1997**		205	57	262	*	15	15	205	72	277	
1998**		315	188	503	*	4	4	315	192	507	
1999**		260	52	312	*	12	12	260	64	324	
84-89 $\bar{X}$	1461.8	543.2	.	543.2	.	.	.	543.2	.	543.2	0.37
95% CL	384.6	246.7	.	246.7	.	.	.	246.7	.	246.7	0.08
N	5	5	0	5	0	0	0	5	0	5	5
86-91 $\bar{X}$	1260.2	460.0	.	460.0	.	.	.	460.0	.	460.0	0.37
95% CL	350.2	263.9	.	263.9	.	.	.	263.9	.	263.9	0.11
N	5	5	0	5	0	0	0	5	0	5	5
92-96 $\bar{X}$	1657.2	536.6	166.0	702.6	.	0.4	0.4	536.6	166.4	703.0	0.42
95% CL	504.8	151.9	121.7	239.3	.	0.7	0.7	151.9	121.5	239.0	0.08
N	5	5	5	5	0	5	5	5	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.

CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992 - 1996 AND ON RETAINED FISH ONLY PRIOR TO 1992.

* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

**DATA OBTAINED FROM THE LICENSE STUB RETURN (1999 DATA ARE PRELIMINARY)

Appendix 2. Atlantic salmon recreational fishery catch and effort data for Middle Brook, Bonavista Bay (SFA 5), 1974-99. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>=63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1974	1823	277	.	277	11	.	11	288	.	288	0.16
1975	1635	415	.	415	8	.	8	423	.	423	0.26
1976	1339	280	.	280	2	.	2	282	.	282	0.21
1977	1511	767	.	767	3	.	3	770	.	770	0.51
1978	1322	391	.	391	1	.	1	392	.	392	0.30
1979	211	28	.	28	0	.	0	28	.	28	0.13
1980	1358	542	.	542	2	.	2	544	.	544	0.40
1981	1574	587	.	587	0	.	0	587	.	587	0.37
1982	2481	504	.	504	8	.	8	512	.	512	0.21
1983	1505	372	.	372	20	.	20	392	.	392	0.26
1984	2712	410	.	410	0	.	0	410	.	410	0.15
1985	2319	538	.	538	*	.	0	538	.	538	0.23
1986	2307	789	.	789	*	.	0	789	.	789	0.34
1987	840	187	.	187	*	.	0	187	.	187	0.22
1988	1545	708	.	708	*	.	0	708	.	708	0.46
1989	712	165	.	165	*	.	0	165	.	165	0.23
1990	949	349	.	349	*	.	0	349	.	349	0.37
1991	903	278	.	278	*	.	0	278	.	278	0.31
1992	1584	423	17	440	*	0	0	423	17	440	0.28
1993	1327	299	387	686	*	37	37	299	424	723	0.54
1994	2049	409	122	531	*	0	0	409	122	531	0.26
1995	2657	402	82	484	*	0	0	402	82	484	0.18
1996	2481	476	153	629	*	0	0	476	153	629	0.25
1997**	1821	77	10	87	*	1	1	77	11	88	0.05
1998**		188	154	342	*	17	17	188	171	359	
1999**		141	37	178	*	14	14	141	51	192	
84-89 $\bar{X}$	1919.0	522.0	.	522.0	.	.	.	522.0	.	522.0	0.27
95% CL	988.5	308.0	.	308.0	.	.	.	308.0	.	308.0	0.15
N	5	5	0	5	0	0	0	5	0	5	5
86-91 $\bar{X}$	1283.2	457.8	.	457.8	.	.	.	457.8	.	457.8	0.36
95% CL	809.1	341.2	.	341.2	.	.	.	341.2	.	341.2	0.09
N	5	5	0	5	0	0	0	5	0	5	5
92-97 $\bar{X}$	1986.5	347.7	128.5	476.2	.	6.3	6.3	347.7	134.8	482.5	0.24
95% CL	539.8	151.7	145.5	221.8	.	15.8	15.8	151.7	160.0	229.5	0.13
N	6	6	6	6	0	6	6	6	6	6	6

1987 DATA NOT INCLUDED IN MEAN

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR

CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992 - 1997 AND ON RETAINED FISH ONLY PRIOR TO 1992

* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND

**1997 DATA WERE OBTAINED FROM A CREEL SURVEY, 1998-99 DATA FROM THE LICENSE STUB RETURN. 1999 DATA ARE PRELIMINARY

Appendix 3. Atlantic salmon recreational fishery catch and effort data for Terra Nova River, Bonavista Bay (SFA 5), 1974-99. Ret. = retained fish; Rel. = released fish

	Effort	Small (<63 cm)			Large (>=63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1974	209	243	.	243	5	.	5	248	.	248	0.12
1975	1723	506	.	506	2	.	2	508	.	508	0.29
1976	1236	424	.	424	7	.	7	431	.	431	0.35
1977	1956	850	.	850	13	.	13	863	.	863	0.44
1978	1608	628	.	628	6	.	6	634	.	634	0.39
1979	910	537	.	537	15	.	15	552	.	552	0.61
1980	872	512	.	512	22	.	22	534	.	534	0.61
1981	1303	739	.	739	33	.	33	772	.	772	0.59
1982	1174	465	.	465	24	.	24	489	.	489	0.42
1983	2157	486	.	486	43	.	43	529	.	529	0.25
1984	2042	636	.	636	0	.	0	636	.	636	0.31
1985	1810	751	.	751	*	.	0	751	.	751	0.41
1986	1485	620	.	620	*	.	0	620	.	620	0.42
1987	1764	546	.	546	*	.	0	546	.	546	0.31
1988	1613	682	.	682	*	.	0	682	.	682	0.42
1989	1946	357	.	357	*	.	0	357	.	357	0.18
1990	2165	624	.	624	*	.	0	624	.	624	0.29
1991	1701	448	.	448	*	.	0	448	.	448	0.26
1992	2488	409	141	550	*	0	0	409	141	550	0.22
1993	3925	484	569	1053	*	62	62	484	631	1115	0.28
1994	5853	822	178	1000	*	44	44	822	222	1044	0.18
1995	6042	696	132	828	*	72	72	696	204	900	0.15
1996	5933	896	260	1156	*	113	113	896	373	1269	0.21
1997**		296	148	444	*	10	10	296	158	454	
1998**		146	379	525	*	32	32	146	411	557	
1999**		85	125	210	*	10	10	85	135	220	
84-89 $\bar{X}$	1779.2	609.2	.	609.2	.	.	.	609.2	.	609.2	0.34
95% CL	285.8	186.1	.	186.1	.	.	.	186.1	.	186.1	0.13
N	5	5	0	5	0	0	0	5	0	5	5
86-91 $\bar{X}$	1782.0	546.2	.	546.2	.	.	.	546.2	.	546.2	0.31
95% CL	338.2	170.4	.	170.4	.	.	.	170.4	.	170.4	0.12
N	5	5	0	5	0	0	0	5	0	5	5
92-96 $\bar{X}$	4848.2	661.4	256.0	917.4	.	58.2	58.2	661.4	314.2	975.6	0.20
95% CL	1966.3	261.3	226.1	294.5	.	51.2	51.2	261.3	244.0	338.3	0.06
N	5	5	5	5	0	5	5	5	5	5	5

1987 DATA NOT INCLUDED IN MEAN

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR

CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992 - 1996 AND ON RETAINED FISH ONLY PRIOR TO 1992

* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND

**DATA OBTAINED FROM THE LICENSE STUB RETURN (1999 DATA ARE PRELIMINARY)

Appendix 4. Atlantic salmon recreational fishery catch and effort data for Northeast River, Placentia Bay (SFA 10), 1974-99. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>=63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	Ret.	Rel.	Tot.	CPUE
1974	1721	142	.	142	0	.	0	142	.	142	0.08
1975	877	121	.	121	4	.	4	125	.	125	0.14
1976	1164	147	.	147	1	.	1	148	.	148	0.13
1977	1465	180	.	180	1	.	1	181	.	181	0.12
1978	1237	161	.	161	0	.	0	161	.	161	0.13
1979	969	138	.	138	0	.	0	138	.	138	0.14
1980	1612	246	.	246	6	.	6	252	.	252	0.16
1981	2339	349	.	349	0	.	0	349	.	349	0.15
1982	1303	150	.	150	0	.	0	150	.	150	0.12
1983	2037	165	.	165	0	.	0	165	.	165	0.08
1984	988	70	.	70	0	.	0	70	.	70	0.07
1985	1276	173	.	173	*	.	0	173	.	173	0.14
1986	862	234	.	234	*	.	0	234	.	234	0.27
1987	349	36	.	36	*	.	0	36	.	36	0.10
1988	772	186	.	186	*	.	0	186	.	186	0.24
1989	852	210	.	210	*	.	0	210	.	210	0.25
1990	786	173	.	173	*	.	0	173	.	173	0.22
1991	153	19	.	19	*	.	0	19	.	19	0.12
1992	485	37	189	226	*	0	0	37	189	226	0.47
1993	592	132	61	193	*	0	0	132	61	193	0.33
1994	313	39	5	44	*	0	0	39	5	44	0.14
1995	544	127	8	135	*	0	0	127	8	135	0.25
1996	2883	268	7	275	*	0	0	268	7	275	0.10
1997**		95	45	140	*	33	33	95	78	173	
1998**		201	102	303	*	23	23	201	125	326	
1999**		52	19	71	*	8	8	52	27	79	
84-89 $\bar{X}$	950.0	174.6	.	174.6	.	.	.	174.6	.	174.6	0.18
95% CL	245.8	78.2	.	78.2	.	.	.	78.2	.	78.2	0.11
N	5	5	0	5	0	0	0	5	0	5	5
86-91 $\bar{X}$	685.0	164.4	.	164.4	.	.	.	164.4	.	164.4	0.24
95% CL	372.4	105.0	.	105.0	.	.	.	105.0	.	105.0	0.03
N	5	5	0	5	0	0	0	5	0	5	5
92-96 $\bar{X}$	963.4	120.6	54.0	174.6	.	0.0	0.0	120.6	54.0	174.6	0.18
95% CL	1336.6	117.0	98.1	110.5	.	0.0	0.0	117.0	98.1	110.5	0.19
N	5	5	5	5	0	5	5	5	5	5	5

1987 DATA NOT INCLUDED IN MEAN.

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.

CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992 - 1996 AND ON RETAINED FISH ONLY PRIOR TO 1992.

* NOT ALLOWED TO RETAIN LARGE SALMON IN INSULAR NEWFOUNDLAND.

**DATA OBTAINED FROM THE LICENSE STUB RETURN (1999 DATA ARE PRELIMINARY).

Appendix 5a. Maximum and minimum water temperatures (°C) measured at the counting fence in Indian Bay Brook for the months of June, July, and August, 1997-99.

Year		Day																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
June																																
1997	Max.																				20.5	17.7	16.7	15.2	17.2	19.0	17.2	18.3	18.0	19.9	20.6	
	Min.																				14.9	14.9	15.3	13.3	12.7	12.6	13.6	13.2	13.9	14.0	14.5	
1998	Max.		14.9	11.8	14.1	13.1	11.4	11.3	11.9	11.7	15.3	16.8	18.4	19.5	19.9	18.8	19.5	20.5	20.8	20.5	18.0	19.5	21.1	22.2	23.0	21.1	18.4	16.5	19.9	20.2	17.9	
	Min.		12.4	10.3	10.1	10.9	10.4	9.9	10.1	10.3	10.1	10.3	12.5	13.9	14.1	12.9	12.9	14.6	17.2	18.2	16.1	15.1	14.5	14.8	17.0	16.8	15.9	13.9	13.5	14.3	15.9	
1999	Max.	15.2	14.1	15.3	16.0	18.0	15.4	14.1	14.9	16.5	18.8	17.2	20.0	20.6	23.5	23.3	19.9	19.8	19.3	22.5	22.8	19.9	23.5	23.7	21.1	23.2	24.2	22.5	20.4	19.5	25.1	
	Min.	13.6	12.6	12.8	11.7	11.8	13.1	11.9	10.6	10.4	12.3	14.1	12.7	14.7	15.5	17.9	16.0	15.9	14.9	13.9	16.1	16.4	15.4	15.7	15.7	15.6	17.5	16.4	17.0	16.2	16.9	
July																																
1997	Max.	20.9	17.6	18.1	18.1	22.1	22.3	23.8	23.8	23.0	22.9	22.1	20.5	23.4	20.3	20.1	19.6	20.0	22.5	24.0	20.9	19.8	19.6	22.8	23.3	22.1	19.5	17.9	24.0	21.8	24.3	24.4
	Min.	14.7	14.9	14.6	14.8	15.8	15.8	15.8	16.5	18.1	18.1	18.0	18.0	17.0	15.6	13.5	13.9	16.4	16.1	17.3	16.8	16.3	16.8	15.3	16.3	15.6	14.8	13.8	15.7	16.4	14.3	16.9
1998	Max.	22.7	20.0	23.4	20.2	18.6	20.5	23.1	20.9	16.9	20.6	17.4	20.3	23.8	22.2	22.4	25.8	25.5	24.9	25.9	23.5	23.4	24.1	21.5	24.8	23.5	22.6	25.0	25.5	23.3	22.6	24.9
	Min.	15.9	16.7	14.7	16.1	16.8	16.5	16.1	16.9	14.8	14.0	14.3	14.8	14.9	17.0	17.5	17.7	19.9	19.8	18.4	19.5	18.6	18.7	17.9	18.2	18.0	17.8	18.0	18.0	18.5	18.8	19.0
1999	Max.	24.6	23.5	19.5	19.5	17.0	16.6	22.8	20.3	21.4	19.9	20.4	24.8	22.0	24.8	25.5	25.9	25.5	21.9	23.6	21.6	24.4	23.0	21.7	22.5	24.8	24.6	21.8	20.0	22.3	24.1	26.4
	Min.	16.6	19.1	16.0	16.0	15.5	12.9	14.3	16.3	15.3	16.0	15.3	15.1	17.6	16.0	18.5	18.5	18.5	17.4	18.0	16.4	15.9	17.8	18.1	18.6	17.5	17.1	17.6	16.6	17.1	17.2	18.0
August																																
1997	Max.	22.9	21.6	24.8	22.0	18.8	23.8	22.5	22.3	25.3	23.1	23.9	22.5	17.7	19.8	21.9	20.5	20.5	18.7	18.4	21.6	22.9	21.4	18.5	17.9	17.7	18.8	19.9	21.1	20.3	16.7	16.1
	Min.	17.8	17.8	17.8	16.4	17.4	16.0	16.3	14.6	17.3	18.9	18.1	16.7	14.8	15.8	15.6	16.5	16.3	14.1	12.9	12.9	13.5	14.4	15.1	14.5	15.1	15.5	15.8	15.2	15.1	13.4	12.4
1998	Max.	25.1	22.8	25.2	25.3	25.1	25.9	24.1	24.0	25.0	27.7	25.6	21.9	22.0	24.4	25.0	23.8	21.9	23.1	22.4	20.9	23.1	23.1	21.3	21.8	19.9	16.1	17.3	17.4	16.1	18.4	20.0
	Min.	17.6	18.1	17.6	17.4	18.7	17.4	19.1	18.2	20.4	20.5	17.9	15.8	17.8	15.6	17.3	18.0	16.7	18.7	17.8	16.4	15.4	17.0	15.0	16.9	16.4	14.4	15.1	15.1	14.1	14.1	14.3
1999	Max.	24.6	27.0	24.8	25.0	23.1	21.8	22.8	21.2	20.1	19.9	23.7	21.5	22.3	23.0	21.4	18.3	22.7	20.8	19.6	23.4	22.8	20.6	18.5	21.7	20.3	21.5	21.0	22.9	21.2	17.9	
	Min.	20.4	19.9	18.1	18.7	18.6	18.2	17.3	17.0	15.6	14.7	14.9	16.3	16.1	19.6	15.9	14.2	15.5	18.2	15.9	14.8	17.0	16.1	16.5	15.1	17.4	14.7	16.4	18.6	17.4	15.1	

Appendix 5b. Maximum and minimum water temperatures (°C) measured at the counting fence in Indian Bay Brook for the months of September and October, 1997-99.

Year		Day																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
																September														
1997	Max.	19.9	19.5	18.6	17.1	19.6	19.0	21.1	18.5	14.6	15.3	18.1	16.4	16.9	16.9	17.8	16.3	15.3	17.3	15.8	17.2	15.9	14.3	14.1	13.9	15.1	13.6	13.9	15.4	15.9	14.9
	Min.	12.1	15.1	15.1	16.0	13.1	14.1	14.4	14.1	13.5	13.7	13.4	13.9	14.3	15.3	15.1	14.4	13.6	13.5	14.6	14.9	12.7	12.6	13.1	10.8	11.3	11.4	10.1	10.2	11.9	12.0
1998	Max.	18.8	17.5	16.7	15.5	13.9	16.0	14.5	18.5	16.9	17.3	16.6	16.5	17.4	16.0	15.0	14.6	13.9	15.3	15.1	13.6	14.1	14.4	14.6	14.6	15.1	13.9	13.4	14.5	14.7	14.6
	Min.	15.3	15.1	14.1	13.5	12.8	12.1	13.4	13.4	15.9	15.4	14.6	15.0	14.0	14.9	14.4	13.3	12.7	12.0	13.1	12.0	12.3	13.6	12.9	12.1	12.3	12.7	12.6	12.6	12.3	12.8
1999	Max.																														
	Min.																														
																October														
1997	Max.	13.9	12.6	12.2	12.0	11.9	11.9	12.4	10.8	10.7	11.3	10.6	9.1	9.6	11.3	9.6	9.9	8.6	8.9	7.7	7.3										
	Min.	12.3	10.3	10.3	10.9	10.8	9.8	9.7	9.6	8.8	9.9	7.9	7.8	8.1	8.0	7.1	8.2	7.7	6.3	5.9	6.3										
1998	Max.	14.3	13.5	12.1	11.8	10.6	9.9	10.8	11.0	11.1	11.0	9.9	9.7	9.8	9.9	8.8	8.9	9.5	9.8	9.7	9.6	9.4	8.4								
	Min.	13.3	12.0	10.9	10.3	9.8	8.8	8.1	9.3	8.4	8.3	9.1	8.9	8.6	7.7	8.4	8.1	8.4	8.6	8.9	8.4	8.1	7.7								
1999	Max.																														
	Min.																														

Appendix 6a. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of June, 1985-99.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1985	Max.																		16.1	15.6	14.0	14.0	13.0	16.1	15.1	17.1	16.1	18.1	20.2	19.1	16.6
	Min.																		13.0	13.0	12.0	13.5	12.5	12.0	12.0	13.0	12.0	12.0	13.0	17.1	13.0
1986	Max.																	15.7	17.7	17.6	14.7	18.1	19.0	19.4	19.2	18.7	18.3	15.2	19.9	15.7	18.3
	Min.																	15.4	12.8	12.1	12.8	11.6	12.4	14.7	15.9	15.4	14.6	13.7	13.2	13.5	14.1
1987	Max.											14.4	15.9	14.8	17.5	14.6	14.9	16.8	17.8	16.7	15.2	16.6	19.1	19.8	18.6	15.7	16.0	17.4	19.6	20.4	19.6
	Min.											14.4	12.6	13.6	12.8	11.9	12.8	13.2	13.1	13.5	13.9	13.3	13.5	14.3	14.9	13.8	13.1	13.1	13.9	14.9	17.5
1988	Max.									10.9	10.8	11.2	13.2	13.0	13.4	11.3	16.5	15.9	12.7	17.0	18.5	17.2	17.1	16.0	17.1	17.0	14.6	16.5	20.0	19.1	17.6
	Min.									9.9	10.0	9.3	10.1	11.3	11.0	9.7	10.8	12.7	11.7	12.3	14.4	15.4	15.0	14.1	14.8	14.3	12.6	12.4	15.9	17.0	15.4
1989	Max.												12.3	12.8	12.2	17.7	19.3	21.8	16.7	19.6	19.6	16.2	16.1	17.3	19.6	22.4	17.3	19.0	23.0	23.2	21.5
	Min.												11.3	10.0	10.0	10.2	12.3	14.0	14.3	15.1	16.2	15.0	14.3	14.3	14.6	15.0	15.3	15.2	16.5	17.6	17.1
1990	Max.										10.1	10.2	10.1	15.1	16.3	9.6	10.1	22.2	16.1	12.9	12.9	16.1	16.2	16.6	16.6	20.2	20.1	16.3	16.3	17.9	17.6
	Min.										10.0	10.0	8.2	8.2	9.7	7.8	5.8	5.2	10.4	10.3	10.4	10.3	10.7	10.7	14.7	14.7	15.2	15.1	14.6	14.6	15.9
1991	Max.										13.8	12.6	9.3	11.9	11.0	11.6	14.6	15.5	14.0	15.8	15.9	14.1	16.1	18.0	16.5	17.0	18.2	17.4	16.1	13.9	16.4
	Min.										10.9	9.5	8.6	8.7	9.1	10.2	10.1	10.8	11.4	11.2	13.6	12.9	12.2	13.4	11.1	10.5	11.6	12.1	13.1	13.3	11.8
1992	Max.																	15.0	15.9	14.4	16.1	17.3	15.9	16.1	17.2	17.9	16.4	15.9	15.4	14.9	14.8
	Min.																	13.9	12.3	12.6	12.8	12.6	13.1	14.1	14.2	14.4	14.6	13.9	14.1	13.6	12.4
1993	Max.														14.1	17.8	19.0	19.5	18.9	15.1	16.0	17.1	12.9	10.6	14.9	14.1	12.4	14.2	16.1	15.3	14.7
	Min.														11.6	10.8	12.6	11.7	15.1	11.9	11.0	11.9	10.6	9.5	9.3	11.9	10.9	10.6	12.6	13.1	11.7
1994	Max.														13.3	17.5	17.0	19.1	18.8	18.4	19.2	17.1	18.1	18.9	16.5	17.8	18.9	19.0	20.0	21.0	21.8
	Min.														12.6	12.7	15.0	13.8	13.8	12.4	13.9	14.4	13.2	16.2	14.9	14.1	13.6	14.1	14.3	16.7	17.9
1995	Max.														14.7	15.3	15.3	17.7	16.8	16.5	15.5	17.8	17.9	19.9	15.9	13.9	16.0	14.3	15.3	13.8	12.8
	Min.														13.8	12.3	12.6	12.7	14.1	13.4	12.2	12.8	13.6	14.4	13.1	12.4	10.9	12.6	12.4	11.9	11.6
1996	Max.					16.4	16.5	17.6	17.0	16.0	17.2	15.2	16.9	15.1	18.6	20.0	18.4	15.6	17.0	16.1	14.8	12.4	12.2	15.4	17.5	18.0	15.3	14.4	15.1	18.8	20.6
	Min.					15.7	13.8	14.0	13.9	13.0	12.0	13.3	11.8	12.9	13.2	15.4	13.9	12.1	12.9	13.2	11.8	10.9	10.6	10.4	11.1	11.6	12.4	11.5	12.1	12.8	14.5
1997	Max.									19.3	12.3	13.0	11.8	11.8	15.0	17.0	17.2	16.5	17.9	20.3	20.9	17.8	16.9	14.8	17.5	18.3	17.8	19.0	19.2	20.0	20.5
	Min.									9.8	10.4	9.4	9.4	9.0	11.3	12.2	13.0	13.9	15.1	15.1	15.1	13.9	14.9	13.1	12.3	12.9	14.7	13.1	14.6	14.5	14.5
1998	Max.	14.9	15.8	12.4	14.0	12.9																									
	Min.	11.0	10.9	10.1	9.3	10.3																									
1999	Max.	16.0	15.3	15.0	16.0	18.0	14.9	15.6	15.2	17.5	19.3	18.4	20.0	21.9	23.2	23.9	19.6	19.1	17.4	21.9	22.5	20.0	22.4	23.8	21.0	23.1	24.4	23.4	20.4	19.5	24.4
	Min.	13.8	13.0	13.1	11.9	12.4	13.6	12.1	11.3	11.1	13.7	14.9	13.1	16.2	16.9	18.6	17.1	16.5	15.5	14.1	16.6	17.4	15.0	17.7	16.2	16.3	18.3	17.4	17.4	16.6	17.1

Appendix 6b. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of July, 1985-99.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1985	Max.	18.1	19.1	19.1	19.1	19.1	21.2	23.2	21.2	20.7	22.2	22.2	21.2	22.2	22.2	22.2	18.6	19.6	18.1	17.1											
	Min.	16.1	15.6	14.0	17.1	17.1	17.1	19.1	19.1	18.1	19.1	20.2	19.1	19.1	19.1	18.1	18.1	17.6	17.1	16.1											
1986	Max.	16.1	17.0	18.1	15.5	15.4	14.4	16.6	16.5	16.3	18.1	17.7	15.2	15.1	18.9	15.8	14.2	16.1	19.0	19.9	16.7	17.8	20.3	20.4	19.6	19.9	20.6	21.2	21.4	15.2	15.3	19.2
	Min.	14.0	12.7	14.0	13.4	13.1	13.5	12.7	13.2	13.8	13.5	14.7	13.7	13.1	13.0	14.0	13.2	13.1	14.3	14.8	15.2	15.4	16.8	15.9	15.8	16.2	18.0	17.1	16.0	14.2	14.0	13.7
1987	Max.	22.4	19.1	20.8	22.2	20.8	20.3	21.6	22.6	24.5	26.2	23.4	21.7	25.9	25.7	26.5	26.1	26.4	26.3	24.8	24.1	24.1	23.8	25.0	26.4	24.7	25.9	23.5	23.3	25.0	25.6	26.0
	Min.	17.3	17.0	14.7	17.4	17.2	14.8	14.5	16.9	18.3	20.1	19.6	19.9	23.1	22.9	25.3	25.7	23.3	20.9	21.0	19.6	17.8	18.0	17.5	19.4	21.3	20.4	20.1	19.1	18.8	19.3	20.6
1988	Max.	18.6	17.5	17.0	19.7	20.9	19.5	18.6	18.7	20.4	22.6	20.4	20.8	20.1	19.4	19.0	20.4	19.2	22.2	22.7	20.9	21.3	19.9	22.5	22.3	20.5	20.8	21.6	23.0	23.3	25.1	23.5
	Min.	15.1	15.2	15.8	15.3	16.7	17.5	16.3	15.6	17.5	18.9	17.9	17.1	18.3	16.2	16.0	16.3	16.6	16.5	18.3	17.9	16.8	18.3	17.4	17.6	18.0	17.1	16.5	17.5	19.9	19.8	21.1
1989	Max.	18.8	20.1	21.4	20.8	18.7	20.6	21.9	24.0	17.4	22.9	20.9	21.2	20.1	20.4	16.6	23.1	23.4	24.5	22.6	23.3	22.2	19.6	21.2	23.2	20.9	23.3	25.5	25.4	23.2	24.3	24.0
	Min.	14.8	14.6	14.8	14.8	16.2	16.4	17.4	17.8	15.8	15.7	17.8	17.0	16.6	14.9	14.1	15.2	17.5	17.1	17.6	17.9	17.9	16.2	16.6	16.8	18.0	18.3	19.4	20.4	18.8	18.8	18.2
1990	Max.	20.1	19.5	18.2	18.0	13.9	13.8	14.2	14.1	13.8	13.7	16.1	15.8	15.8	14.7	15.0	15.4	18.9	19.0	20.9	20.6	20.5	20.2	21.0	20.4	20.9	20.5	19.6	19.2	18.8	18.8	19.4
	Min.	15.7	16.8	16.7	14.0	13.6	13.1	13.0	13.6	13.4	13.1	13.0	12.8	12.6	12.7	12.6	14.6	14.8	16.5	16.4	18.5	18.1	18.2	17.9	17.7	17.6	17.9	18.0	16.7	16.8	15.6	15.5
1991	Max.	15.2	14.5	14.9	18.3	17.0	13.9	15.4	14.6	15.1	15.4	17.1	19.3	17.5	16.1	20.6	20.6	19.1	19.6	22.1	23.5	21.0	20.2	19.6	22.5	23.0	20.5	21.0	24.0	24.4	26.0	23.5
	Min.	12.9	12.9	12.4	12.3	14.4	12.1	11.8	13.1	13.3	13.6	13.9	13.9	13.5	14.6	14.4	16.5	16.5	14.4	15.4	17.8	17.5	15.6	15.9	16.5	16.4	18.0	17.6	17.9	17.0	18.9	18.9
1992	Max.	14.3	13.4	12.1	11.3	14.1	13.3	12.7	15.3	17.0	16.2	15.4	14.9	17.1	17.5	19.0	16.4	14.9	16.5	16.5	19.8	18.9	19.1	19.0	21.0	21.3	20.5	19.0	19.8	19.6	21.0	20.3
	Min.	12.9	12.3	11.3	10.6	10.2	11.6	11.6	12.0	13.6	13.3	12.7	13.1	12.3	13.1	14.3	13.1	12.9	12.6	14.1	14.4	13.9	15.1	15.1	16.1	15.6	17.4	17.6	15.5	15.4	16.7	17.7
1993	Max.	17.8	18.4	18.4	15.3	15.1	14.9	17.5	15.8	14.5	16.2	16.6	19.5	17.1	17.0	16.6	16.5	15.2	14.9	15.6	17.5	15.1	18.9	18.4	15.2	16.8	18.0	18.7	17.0	18.2	18.0	20.6
	Min.	12.4	13.8	14.9	13.3	13.6	13.3	13.6	13.7	13.1	12.6	14.1	14.3	13.8	14.3	13.4	13.1	14.3	13.9	13.6	14.0	13.9	14.0	15.1	13.8	13.1	14.1	14.8	15.6	15.8	16.8	17.5
1994	Max.	21.7	22.5	22.5	21.4	19.1	19.1	19.1	22.1	20.1	20.5	21.4	22.6																			
	Min.	17.3	18.6	18.5	17.5	17.5	10.9	10.9	16.4	17.3	16.9	17.0	17.0																			
1995	Max.	16.3	13.7	17.6	18.7	21.2	22.5	23.9	22.5	22.3	22.0	23.3	23.8	23.0	22.4	20.8	16.3	19.9	17.4	19.1	21.0	19.7	22.1	21.1	23.3	22.5	21.3	22.6	23.3	20.9	20.8	21.3
	Min.	10.9	12.9	12.4	14.6	16.1	17.2	18.4	15.8	19.0	19.3	18.8	19.3	18.9	19.1	16.6	14.8	14.0	14.4	14.3	16.6	17.8	16.4	17.6	18.5	18.9	19.2	17.5	17.0	17.3	18.1	16.7
1996	Max.	21.8	22.5	20.0	21.0	19.9	21.1	19.9	19.8	20.5	18.2	21.9	21.8	22.9	21.4	19.8	18.5	21.4	21.2	20.2	19.2	20.5	19.5	19.3	19.0	21.2	21.8	21.0	20.0	19.6	22.4	23.8
	Min.	15.9	17.2	17.8	17.1	17.9	17.3	18.0	16.2	16.7	16.6	17.1	17.7	17.6	18.2	15.1	16.6	17.0	18.1	18.1	17.7	18.2	18.1	17.2	17.1	17.1	16.9	19.4	18.5	17.2	17.1	19.4
1997	Max.	22.0	19.0	19.0	19.4	22.3	22.8	23.8	22.8	23.4	23.1	22.3	20.9	22.7	19.6	20.1	19.3	20.0	23.5	23.3	20.3	20.8	20.9	22.5	23.1	21.3	19.8	18.0	23.4	20.5	23.8	24.3
	Min.	15.1	14.9	15.8	16.1	16.4	16.9	16.9	16.9	19.5	18.3	18.5	18.3	17.8	15.8	13.7	14.6	16.9	17.5	17.9	17.3	16.5	17.1	15.4	16.6	16.1	15.6	15.3	15.7	16.8	15.2	17.0
1998	Max.																															
	Min.																															
1999	Max.	24.2	23.5	20.2	19.9	18.1	16.6	22.7	21.0	20.8	19.5	21.9	25.0	20.5	23.8	25.2	25.3	25.2	22.8	23.9	20.5	24.4	22.1	22.4	23.8	24.9	24.0	20.6	20.8	23.2	23.5	25.9
	Min.	17.9	19.5	17.6	16.9	15.3	13.8	15.2	17.5	16.5	17.1	16.1	16.1	18.4	16.5	18.5	19.6	20.1	17.8	19.1	17.4	17.1	18.5	18.4	19.3	19.1	18.4	17.9	17.0	18.1	18.9	19.1

Appendix 6c. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of August, 1985-99.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1985	Max.																															
	Min.																															
1986	Max.	14.2	17.3	20.3	19.3	21.6	20.4	21.2	19.8	20.9	18.1	18.8	20.4	21.9	19.6																	
	Min.	14.0	15.2	16.7	17.9	16.8	16.3	17.4	17.6	17.7	16.4	16.5	16.4	18.5	18.7																	
1987	Max.	24.4	24.0	21.0	24.6	25.6	24.7	25.1	25.9	23.8	25.6	25.2	22.4	17.7	21.5	22.2	21.0	23.2	21.2	25.7	23.1	21.5	22.9	20.4	20.1	20.2	18.6	19.0	20.4	22.0	19.7	20.1
	Min.	20.6	19.1	18.8	16.8	19.7	19.1	17.8	18.3	18.5	18.9	18.2	18.0	14.8	13.0	16.8	17.6	17.8	17.5	18.0	19.1	18.5	17.3	17.6	16.8	14.2	14.4	13.7	13.4	14.5	15.5	15.3
1988	Max.	25.0	22.6	22.8	23.1	25.1	22.3	19.6	21.6	24.9	22.9	23.3	25.6	23.3	20.9	21.5	23.3	23.3	19.0	18.5	19.1	19.3	17.9	16.9	20.1	22.3	22.9	21.0	24.0	24.0	22.8	21.1
	Min.	20.4	18.9	18.6	17.6	18.7	17.5	17.7	19.3	19.8	19.8	18.5	19.0	20.3	17.4	15.0	16.7	17.7	15.7	15.8	14.9	14.1	15.8	13.4	13.7	15.9	16.0	16.5	18.3	19.5	20.1	18.0
1989	Max.	25.3	26.6	27.4	25.5	22.1	23.6	22.9	24.0	25.4	24.5	25.9	26.3	20.8	19.9	27.7	27.7	27.7	18.8	23.6	27.5	23.9	23.6	16.3	17.9	19.1	18.6	16.5	15.9	19.2	21.1	18.8
	Min.	18.5	19.5	19.1	19.6	19.8	20.5	20.0	21.2	19.1	19.3	20.1	20.8	17.6	18.0	18.9	21.1	16.4	13.2	15.7	17.2	16.5	15.9	13.0	14.0	14.4	14.5	13.3	12.6	14.8	15.7	15.1
1990	Max.	18.4	18.3	18.4	18.0	18.7	19.0	18.5	20.5	20.2	15.4	14.9	18.9	18.3	16.9	16.9	18.3	18.4	19.4	19.1	20.2	19.8	17.2	17.1	21.1	20.3	22.2	21.7	18.3	17.6	18.6	18.3
	Min.	15.0	15.0	16.3	16.3	15.1	15.0	14.9	15.1	15.5	14.8	13.3	13.1	15.6	15.2	15.3	15.2	15.4	15.4	16.1	16.0	16.0	16.0	15.6	15.4	15.1	14.9	17.1	16.9	16.3	16.1	16.0
1991	Max.	18.6	16.4	16.3	20.6	17.6	17.7	17.9	20.5	22.3	20.3	20.1	22.6	23.8	23.5	20.4	22.8	24.2	21.4	18.4	18.9	17.1	21.3	20.8	19.4	19.4	20.6	19.5	21.1	18.3	16.5	16.3
	Min.	16.2	14.8	14.2	14.1	14.1	13.2	13.8	13.4	15.5	16.8	16.8	16.8	18.0	18.9	17.1	16.7	17.6	18.8	15.3	15.1	15.4	16.8	16.0	14.4	14.8	15.9	14.3	14.5	16.0	15.1	12.9
1992	Max.	18.8	18.4	19.3	19.0	18.1	19.6	19.6	20.1	21.4	21.5	21.0	22.2	20.3	19.1	21.0	21.1	21.0	22.5	20.9	20.6	21.9	19.0	18.8	17.5	17.5	18.3	17.0	16.5			
	Min.	17.0	15.3	14.8	16.6	16.8	16.5	16.9	16.8	17.2	18.1	18.6	18.6	17.6	16.3	16.5	16.9	17.2	17.9	19.2	17.9	18.8	16.5	15.4	16.2	16.5	14.4	15.0	16.1			
1993	Max.	21.9	22.6	23.0	22.3	22.5	22.6	21.8	22.3	21.5	21.4	21.5	21.6	21.5	19.3	20.5	20.6	20.9	21.9	21.0	19.4	18.5	20.9	20.3	19.0	19.1	18.0	15.3	17.9	16.4	15.5	14.4
	Min.	18.4	18.6	20.0	20.9	20.1	20.1	19.9	19.0	18.8	18.0	18.0	19.3	18.3	18.1	17.3	17.7	18.7	18.1	18.0	18.0	17.0	15.4	17.0	17.0	16.5	14.6	13.8	14.1	14.1	12.8	12.8
1994	Max.																															
	Min.																															
1995	Max.	19.9	21.5	22.4	20.4	21.3	22.0	23.5	25.0	25.0	25.0	25.3	24.4	22.0	21.3	19.6	22.4	19.7	20.0	19.3	22.7	23.6	21.1	16.9	16.3	18.5	17.2	16.8	19.2	17.8	16.0	
	Min.	17.3	14.9	15.4	15.5	17.4	17.3	17.3	19.2	18.4	18.8	19.2	20.0	15.8	13.9	17.0	18.1	16.0	14.1	15.4	15.9	19.5	16.4	14.9	14.1	14.9	14.6	13.3	13.3	14.4	14.0	
1996	Max.	24.1	22.2	22.0	24.4	24.5	26.1	25.7	26.6	26.2	26.2	25.6	24.3	24.1	21.9	22.4	23.6	24.0	24.1	22.5	23.5	24.2	24.0	24.1	21.5	23.4	22.5	22.0	23.9	20.8	22.4	20.2
	Min.	19.5	19.6	19.4	18.9	19.1	21.5	20.0	21.7	21.2	21.0	22.2	21.0	20.3	20.0	19.2	17.9	18.6	20.0	19.4	16.8	17.2	18.0	17.3	18.9	19.0	18.0	17.0	17.2	18.3	17.2	15.7
1997	Max.	24.0	21.5	25.5	21.5	19.3	22.4	22.7	22.3	24.6	22.9	25.1	22.9	18.7	19.2	21.5	19.5	20.2	17.7	17.8	22.3	22.4	19.8	20.1	19.2	19.0	19.0	21.1	21.5	19.3	16.9	16.9
	Min.	18.5	18.3	18.5	18.0	17.5	16.5	17.1	16.1	18.3	19.1	19.3	17.0	15.1	16.5	15.9	17.3	16.5	14.9	13.4	13.6	15.4	15.4	15.6	16.1	16.5	16.5	16.6	16.4	15.4	14.6	12.6
1998	Max.																															
	Min.																															
1999	Max.	24.5	27.3	25.3	26.2	24.8	20.8	22.2	20.8	20.6	19.7	23.5	19.7	21.9	22.4	19.5	19.5	22.1	19.6	19.5	22.6	22.2	18.9	19.5	21.4	19.8	21.1	20.8	22.0	20.4	21.0	22.3
	Min.	20.8	20.1	19.7	19.9	20.1	19.5	17.8	18.0	15.8	15.7	15.7	17.7	17.1	19.8	16.8	15.1	16.9	18.0	16.7	15.1	18.4	17.0	16.6	15.9	17.6	15.8	17.1	18.9	18.1	16.4	16.6

Appendix 6d. Maximum and minimum water temperatures (°C) measured at the fishway in Middle Brook for the month of September, 1985-99.

Year		Date																										
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1985	Max.																														
	Min.																														
1986	Max.																														
	Min.																														
1987	Max.	19.4	18.6	18.8	16.8	14.5	14.5	15.0	13.4	11.7	13.7	14.3	16.8	17.2	18.4	16.8	17.8	17.5	16.6	11.9											
	Min.	12.9	15.9	13.5	12.3	12.1	12.4	13.6	11.6	10.7	10.9	10.8	9.6	9.6	11.4	13.7	12.9	14.7	12.5	10.4											
1988	Max.	22.6																													
	Min.	16.4																													
1989	Max.																														
	Min.																														
1990	Max.	21.7	20.4	23.8	23.5	24.2	23.4	22.5	22.0	24.0	23.4	19.4	19.3	17.6																	
	Min.	16.1	17.9	17.7	18.8	18.7	18.8	18.7	17.9	17.6	19.2	18.8	17.3	17.3																	
1991	Max.	13.4	15.3	17.4	19.6	16.7	15.4	14.9	15.4	13.6	14.2	14.0	13.5	12.6	14.1	15.1	14.4	17.6	15.6	15.1											
	Min.	11.9	11.2	13.2	14.4	14.7	14.8	14.2	13.0	11.6	11.6	12.3	12.3	11.6	11.1	11.6	13.1	13.6	12.8	14.6											
1992	Max.																														
	Min.																														
1993	Max.	18.0	16.3																												
	Min.	13.0	14.1																												
1994	Max.																														
	Min.																														
1995	Max.																														
	Min.																														
1996	Max.	21.0	21.0	19.4	17.4																										
	Min.	16.5	15.7	13.7	14.8																										
1997	Max.	18.5	19.6	17.8	18.6	19.8	19.0	20.4	18.0	15.1	15.4	17.5	17.5	16.5	17.1	18.3	16.5	15.1	17.8	16.0	17.6	16.4	14.8	14.6	13.0						
	Min.	12.9	15.9	15.8	16.7	14.3	15.1	14.9	14.9	14.3	14.3	13.9	14.8	15.2	15.6	15.1	15.3	13.9	13.7	15.1	15.3	13.3	13.4	13.3	11.4						
1998	Max.																														
	Min.																														
1999	Max.	23.8	24.5																												
	Min.	18.0	19.3																												

Appendix 7a. Maximum and minimum water temperatures (°C) measured at the fishway in Lower Terra Nova River for the month of June, 1985-99.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1985	Max.																														
	Min.																														
1986	Max.																		14.9	14.5	14.1	14.4	15.6	17.3	17.5	16.8	16.1	15.9	16.0	15.9	15.5
	Min.																		13.7	12.9	13.4	12.5	13.6	15.3	16.8	15.5	15.1	14.9	13.8	14.8	14.6
1987	Max.															14.9	14.5	15.1	15.9	16.0	15.7	14.7	15.4	16.5	16.6	16.3	15.0	15.1	16.6	17.9	18.4
	Min.															14.8	13.7	14.2	14.6	15.5	14.3	13.8	13.9	15.0	15.6	15.3	14.2	14.1	14.6	15.9	17.4
1988	Max.																												18.6	18.9	18.5
	Min.																												16.9	18.6	17.4
1989	Max.												13.5	12.6	11.5	12.6	14.4	16.7	16.8	17.0	17.3	17.4	16.5	16.1	17.4	19.6	19.7	19.6	20.9	21.0	20.1
	Min.												12.2	11.6	10.5	10.4	12.2	14.0	15.9	15.9	16.6	16.4	15.6	15.5	15.8	17.2	18.4	18.3	18.7	19.3	18.6
1990	Max.										14.0	13.7	13.0	14.5	16.2	16.3	17.1	17.3	17.2	16.0	12.2	10.6	10.2	12.0	12.0	15.8	17.5	17.6	17.1	16.9	16.7
	Min.										12.9	12.1	11.6	11.7	14.5	16.0	16.2	16.1	16.2	12.6	10.5	9.0	8.3	9.4	11.3	12.1	15.5	16.5	16.3	15.8	15.5
1991	Max.									9.9	12.6	12.9	12.4	11.9	12.2	11.6	12.6	14.4	14.6	16.6	16.7	16.0	14.1	15.4	16.0	16.6	17.5	18.1	18.1	16.1	13.9
	Min.									9.7	9.1	12.2	10.9	10.4	11.4	10.7	10.1	11.3	13.1	13.6	15.8	13.6	12.1	12.6	13.8	14.4	15.0	16.3	16.2	14.0	12.4
1992	Max.																			13.0	15.4	16.5	16.4	15.6	15.3	16.8	16.6	15.4	15.1	14.4	13.4
	Min.																			12.4	12.4	14.1	14.9	14.3	14.0	14.9	15.5	14.5	14.1	13.6	11.9
1993	Max.																														
	Min.																														
1994	Max.												16.1	16.4	16.4	16.5	17.5	18.3	18.3	17.8	16.7	16.1	16.5	17.0	17.0	15.8	16.9	17.9	18.7	20.0	21.5
	Min.												14.9	14.6	14.4	13.9	16.3	16.1	16.3	15.6	14.6	14.9	13.9	15.9	15.5	13.9	14.4	15.3	16.4	18.0	19.3
1995	Max.											13.6	14.6	16.4	16.5	16.6	16.6	16.3	16.3	15.3	14.7	15.4	16.6	17.8	17.6	15.4	13.9	13.3	13.3	13.4	13.2
	Min.											13.4	12.4	14.6	15.9	15.6	15.6	14.3	14.4	14.2	13.1	12.6	14.0	15.6	15.6	14.1	11.7	11.7	11.9	12.2	12.3
1996	Max.						17.2	17.6	17.3	16.6	14.4	14.4	14.4	14.4	16.8	17.9	17.6	16.0	14.4	14.9	14.9	12.8	10.8	12.0	14.6	17.0	17.1	15.2	14.4	16.1	18.4
	Min.						16.0	15.8	15.8	13.6	12.1	12.9	11.8	13.0	13.9	16.2	16.1	14.4	13.1	13.2	12.9	10.8	9.6	9.4	10.9	13.8	15.4	13.8	12.9	13.1	15.1
1997	Max.											13.6	13.3	11.9	14.1	16.1	16.2	16.9	18.5	18.9	19.5	19.4	17.4	15.9	13.1	15.3	16.1	17.1	18.0	18.3	19.3
	Min.											12.9	11.7	11.0	11.6	13.4	14.3	15.2	16.4	17.1	17.3	17.1	15.9	12.9	11.5	12.0	14.6	14.9	15.9	16.4	16.9
1998	Max.								9.8	9.9	12.7	15.6	17.5	18.6	19.5	20.6	20.7	20.2	19.8	20.4	19.9	17.7	17.9	18.9	20.0	21.4	20.9	18.1	16.0	17.2	17.3
	Min.								9.3	9.3	9.4	11.8	14.4	15.9	17.1	18.2	19.1	18.2	18.5	19.4	17.5	16.1	16.3	17.0	18.4	19.8	18.4	15.8	14.6	14.6	16.3
1999	Max.	16.9	14.8	14.4	14.1	15.9	15.4	13.4	12.7	14.1	16.6	17.4	19.5	21.0	21.8	21.7	21.2	18.6	16.9	17.3	19.0	19.0	19.9	20.9	20.8	21.5	21.5	20.9	20.3	19.0	21.2
	Min.	15.0	13.4	13.1	12.4	12.6	13.4	12.1	11.2	10.9	13.1	15.6	15.9	18.3	19.6	20.4	18.6	17.0	15.2	14.4	16.1	18.0	17.8	19.1	19.6	19.8	20.2	19.9	18.7	18.5	18.6

Appendix 7b. Maximum and minimum water temperatures (°C) measured at the fishway in Lower Terra Nova River for the month of July, 1985-99.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1985	Max.																								19.3	20.3	20.3	20.3	19.8	19.8	19.8	19.8
	Min.																								18.8	18.8	18.8	19.8	19.3	18.8	18.3	18.3
1986	Max.	16.2	15.4	15.7	15.3	15.3	14.8	14.6	14.5	15.3	16.4	16.7	15.8	14.2	16.0	15.8	15.0	14.3	16.7	18.6	18.4	18.3	19.6	19.6	19.4	18.6	19.3	21.0	20.8	19.1	16.3	15.4
	Min.	15.2	14.1	14.1	14.5	14.3	13.8	13.0	13.4	14.0	14.9	15.8	14.4	13.7	13.6	15.5	14.1	13.5	13.9	16.7	17.5	17.6	17.5	18.7	18.6	17.5	18.1	19.0	19.6	17.0	14.4	13.9
1987	Max.	18.6	18.3	18.1	18.2	17.8	17.3	18.2	20.7	21.4	22.4	22.6	23.4	24.4	25.7	25.7	25.4	25.2	24.1	22.3	21.7	20.9	20.7	20.8	22.1	21.7	22.9	22.0	21.0	21.6	22.2	23.8
	Min.	17.1	17.7	16.4	17.3	17.0	15.6	16.2	17.2	19.4	20.2	20.9	20.9	22.3	23.1	24.2	24.1	24.3	21.9	21.2	20.0	18.9	17.4	18.2	19.0	20.4	20.4	20.6	19.5	18.8	19.3	20.4
1988	Max.	17.6	17.7	18.4	18.8	20.1	20.4	20.1	19.7	20.2	21.7	21.5	20.7	20.9	19.1	19.3	19.8	20.1	20.9	21.5	21.7	20.9	21.3	20.4	20.9	20.9	20.6	21.6	22.0	22.1	23.2	23.4
	Min.	16.7	16.8	17.6	17.0	18.1	19.6	18.8	18.4	19.1	19.7	20.2	19.9	19.6	17.9	18.4	18.6	19.2	18.6	20.2	20.5	19.4	20.0	19.0	19.5	20.1	19.4	19.8	20.6	21.4	21.9	23.1
1989	Max.	19.0	18.5	19.0	19.5	17.7	18.3	18.6	19.4	17.8	19.0	20.0	20.2	19.3	19.0	17.0	18.3	19.3	20.9	21.9	21.4	21.0	19.3	18.7	19.2	18.8	20.0	21.7	22.4	21.7	22.0	21.1
	Min.	17.0	17.1	17.1	17.5	16.5	16.7	17.7	17.6	16.2	16.4	18.4	18.4	17.8	16.8	15.5	15.7	17.4	18.7	20.0	19.8	19.2	17.5	17.2	17.5	18.0	18.1	19.3	21.0	20.5	20.2	19.3
1990	Max.	15.8	15.6	15.1	14.5	13.8	14.6	14.0	13.3	13.0	13.9	15.1	15.6	15.4	15.3	15.5	15.5	14.9	15.8	17.3	17.6	17.6	18.1	18.1	17.0	19.4	19.5	17.9	17.5	16.4	16.3	16.8
	Min.	14.2	14.4	14.1	13.8	12.6	12.2	12.7	11.3	12.3	12.5	13.3	14.2	14.2	14.0	13.7	14.6	14.2	14.3	15.4	16.5	16.8	16.5	16.6	15.8	17.1	18.2	16.6	16.4	15.2	15.9	16.2
1991	Max.	13.5	13.0	13.1	14.7	15.2	15.1	14.8	14.6	15.8	15.2	15.6	16.6	16.5	16.3	18.6	18.8	19.0	19.1	20.4	21.9	20.9	19.5	18.8	19.4	20.4	19.1	19.6	21.3	21.8	22.5	21.6
	Min.	12.4	12.1	12.2	12.6	14.5	13.7	13.2	14.1	14.1	14.6	14.7	15.1	15.8	15.8	15.9	17.6	18.3	17.5	17.4	19.3	19.6	18.5	17.7	16.9	17.0	18.1	18.1	18.6	18.8	19.4	19.9
1992	Max.	13.2	13.3	12.1	10.6	11.3	11.9	13.1	15.1	16.8	16.9	15.9	15.6	14.5	16.1	17.1	17.0	16.3	15.0	15.4	17.8	18.3	19.0	18.7	18.4	19.3	19.6	19.6	19.0	19.0	19.3	19.4
	Min.	12.1	12.2	10.6	9.4	8.6	10.5	11.9	13.1	14.5	15.9	15.3	13.8	12.4	13.4	14.9	16.1	14.5	13.1	14.3	14.8	16.1	17.5	16.7	16.9	16.9	18.0	18.5	17.8	17.1	17.4	18.3
1993	Max.																16.9	19.5	19.5	18.1	15.9	15.0	14.9	12.1	10.9	11.8	11.8	13.1	15.6	15.6	15.2	15.9
	Min.																15.4	17.0	18.0	16.1	13.6	13.1	12.3	9.3	8.2	10.6	11.2	10.8	13.2	15.0	13.9	12.8
1994	Max.	21.8	21.6	21.6	20.7	19.8	17.3	17.4	18.8	19.0	18.4	19.5	20.6	20.8	21.0	20.8	20.1	19.9	20.6	20.0	20.0	19.0	19.5	19.2	17.0	18.4	21.8	23.5	23.5	23.0	22.6	23.1
	Min.	19.9	20.5	20.0	18.6	17.4	15.8	15.4	16.5	17.6	17.3	17.6	18.7	19.5	19.8	19.0	18.4	18.5	19.2	19.2	18.8	18.1	18.0	17.2	16.0	16.1	18.3	21.4	22.4	21.9	20.5	21.0
1995	Max.	13.1	13.9	15.9	17.5	19.9	21.3	22.6	22.8	23.1	22.0	21.4	22.7	21.8	20.9	20.0	17.6	16.2	15.4	15.9	18.0	18.5	19.0	19.3	20.9	21.9	21.6	20.8	21.0	21.0	19.4	19.0
	Min.	11.4	13.1	13.5	15.4	17.1	19.0	20.4	21.0	22.1	20.6	20.4	20.6	20.8	20.0	18.0	14.9	13.8	13.8	13.3	15.3	17.1	17.0	18.5	18.8	20.6	20.6	19.4	19.0	18.8	18.3	17.4
1996	Max.	19.5	20.6	20.5	20.5	20.6	20.6	20.2	18.6	18.4	18.1	18.9	19.3	20.0	19.8	18.3	17.4	19.2	19.8	19.7	19.0	19.6	19.5	18.8	18.0	19.5	21.1	20.9	20.1	19.6	20.2	21.8
	Min.	16.9	18.4	19.1	19.0	19.3	19.0	18.4	17.0	16.4	16.6	16.5	18.1	18.0	18.4	15.9	16.5	16.1	18.4	18.1	18.0	18.8	18.4	17.5	17.5	17.1	18.8	19.6	19.4	18.2	18.0	19.5
1997	Max.	20.9	20.9	18.5	18.1	19.5	20.1	20.7	21.8	22.0	21.6	21.0	20.5	20.7	20.0	17.1	16.5	16.8	19.1	21.0	19.6	19.2	19.0	19.4	19.8	19.5	19.0	18.3	19.0	18.5	19.5	21.1
	Min.	18.4	18.6	16.9	16.8	17.4	17.9	18.5	20.1	20.9	20.1	19.7	19.3	19.4	17.1	15.6	15.6	15.6	16.7	18.6	18.9	18.3	17.8	17.0	17.6	17.8	17.4	15.9	15.8	17.1	15.9	17.3
1998	Max.	19.9	19.0	20.5	19.9	19.5	19.5	21.4	21.0	19.1	17.7	16.8	16.9	19.5	20.6	21.4	23.9	23.9	24.3	24.6	23.3	22.1	22.2	21.1	21.5	22.1	22.5	23.3	23.5	22.9	22.0	23.2
	Min.	16.8	18.1	17.3	19.3	18.1	18.5	18.5	19.5	17.0	15.8	15.6	14.6	16.1	18.0	18.8	19.6	22.0	22.1	21.7	21.5	20.4	19.9	19.4	19.0	19.0	18.8	19.4	19.9	20.0	20.0	19.9
1999	Max.	21.4	21.9	21.0	19.5	18.5	17.0	18.5	18.6	18.5	18.6	19.4	21.0	19.3	20.9	22.4	22.9	23.8	23.1	22.9	21.1	21.9	20.9	20.4	20.1	21.8	22.5	21.0	19.5	21.3	21.6	23.5
	Min.	20.1	20.5	19.0	17.9	16.8	15.6	15.4	16.9	16.9	17.4	17.0	17.1	18.4	17.4	19.9	20.5	21.4	20.4	20.8	19.5	18.5	19.1	18.7	18.5	18.2	19.0	19.1	18.2	18.5	19.0	20.0

Appendix 7c. Maximum and minimum water temperatures (°C) measured at the fishway in Lower Terra Nova River for the month of August, 1985-99.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1985	Max.	19.8	19.3	17.3	17.3	17.8	19.3	20.8	22.3	22.3	23.4	23.4	22.3	22.3	20.8	19.8	18.3	17.8	17.8	17.3	17.3	17.3	17.3	17.3	16.3	16.3	17.3	17.3	17.3	16.3	15.3	14.8
	Min.	18.3	16.8	15.3	17.3	17.3	17.8	19.3	20.3	21.3	21.3	21.8	22.3	20.8	19.8	17.8	17.3	17.3	17.3	16.3	17.3	17.3	17.3	16.8	15.3	15.3	16.3	17.3	16.3	15.3	14.3	13.3
1986	Max.	14.8	15.1	17.2	17.7	19.6	19.2	19.4	19.2	19.2	19.0	18.2	18.4	19.2	19.4	20.2	21.2	20.8	20.8	20.8	20.3	20.3	20.2	18.9	17.8	17.4	16.4	16.9	16.3	15.6		
	Min.	14.1	13.7	14.5	16.2	17.4	18.6	18.2	18.8	18.4	18.7	17.8	16.9	17.6	17.9	18.0	19.2	19.2	18.8	19.0	19.5	18.7	18.5	17.8	16.9	16.1	15.0	15.0	14.8	15.1		
1987	Max.	22.8	22.0	21.3	21.1	22.2	22.1	22.0	22.3	22.0	21.7	21.9	21.0	18.7	17.8	18.5	18.5	19.4	19.2	20.5	19.7	19.9	19.9	20.0	19.2	17.9	17.1	16.8	17.7	17.5	16.9	17.8
	Min.	21.2	20.3	19.8	18.1	19.1	19.8	19.0	19.0	19.0	19.5	19.4	18.7	16.6	15.1	15.6	16.5	17.0	17.5	17.8	18.4	18.6	18.0	18.2	18.1	16.3	15.6	15.4	15.0	15.8	15.7	15.9
1988	Max.	23.4	22.9	22.7	22.3	22.3	21.6	21.0	21.4	24.0	23.5	23.9	23.7	23.2	22.6	20.1	20.3	21.2	20.0	19.4	19.2	18.7	17.8	17.1	18.1	19.0	20.0	19.8	21.5	22.3	22.3	21.7
	Min.	22.2	22.5	22.0	21.5	21.1	21.3	20.4	20.3	21.5	22.9	22.2	22.6	22.8	20.1	18.7	18.8	18.7	19.2	18.3	18.1	17.7	17.3	16.4	15.3	16.4	17.3	17.7	18.9	20.4	21.0	20.7
1989	Max.	21.4	22.1	23.0	22.5	21.1	21.7	21.3	21.7	22.0	22.5	22.6	23.0	21.6	19.2	20.7	22.2	23.3	21.8	20.7	20.7	20.0	20.4	19.5	18.4	18.2	17.3	15.9	15.0	15.9	17.3	
	Min.	19.5	20.3	20.8	20.3	20.1	20.3	20.7	20.9	20.6	20.6	21.0	21.5	19.1	18.6	18.6	20.4	21.8	19.6	18.5	18.8	18.8	19.4	17.9	17.6	16.1	15.1	14.1	13.2	14.0	15.5	
1990	Max.	17.9	17.4	17.4	18.7	18.7	20.6	21.4	22.6	21.9	22.5	21.8	21.7	21.3	20.1	19.6	19.8	20.7	17.7	15.2	15.6	15.4	15.8	15.5	15.8	16.0	15.6	15.6	16.4	18.0	18.6	18.7
	Min.	16.7	16.9	16.5	17.2	18.4	18.4	20.0	20.5	20.9	20.9	21.0	21.0	20.0	18.9	18.3	17.7	16.9	14.4	13.1	13.5	13.5	14.0	13.9	12.9	14.2	14.0	14.6	15.0	16.0	16.8	16.1
1991	Max.	19.6	17.3	15.1	16.0	15.1	14.4	15.6	16.5	18.0	18.4	19.1	20.3	21.7	22.3	21.0	21.0	21.6	20.3	19.1	17.6	17.1	18.4	19.0	18.5	18.0	18.5	18.1	18.3	17.8	17.2	16.6
	Min.	17.5	15.2	14.1	13.4	13.8	12.6	13.7	13.5	14.9	16.5	17.0	17.6	18.6	20.1	20.0	18.9	18.9	19.3	17.0	16.0	16.3	16.1	16.9	15.4	15.2	15.6	16.2	14.9	15.9	16.1	14.6
1992	Max.	19.1	18.0	16.9	17.1	17.5	19.4	19.2	19.4	20.5	20.8	20.6	20.0	20.0	18.5	17.5	18.3	18.7	19.9	20.2	20.4	20.5	19.9	17.6	16.3	15.8	15.6	15.0				
	Min.	17.9	16.3	15.1	15.6	16.9	17.3	17.4	17.3	18.1	19.4	19.0	19.0	18.4	16.5	15.9	16.1	17.3	17.9	19.5	18.9	19.4	17.8	16.0	15.3	15.3	14.1	14.1				
1993	Max.	17.5	17.5	16.9	15.4	13.4	14.9	15.3	15.1	14.0	15.7	17.5	17.2	16.8	16.4	15.3	15.1	14.2	14.6	16.0	16.0	16.6	16.6	15.9	14.7	17.1	17.8	17.6	17.8	18.9	19.8	21.3
	Min.	14.9	15.9	15.4	13.6	12.4	12.9	14.6	13.5	12.6	14.1	15.3	16.1	16.1	14.9	14.2	14.1	13.8	13.2	14.1	15.0	14.6	15.6	14.8	13.0	13.9	15.9	16.3	16.0	17.5	18.2	19.5
1994	Max.	23.5	23.5	21.8	21.5	21.9	21.7	19.9	20.1	22.1	22.5	22.2	20.7	19.5	21.1	21.0	19.5	18.8	19.4	19.9	19.9	19.5	19.4	18.9	18.8	19.2	19.3	20.4	20.6	21.6	20.5	18.3
	Min.	21.8	21.3	19.5	19.2	20.7	20.0	19.1	19.4	20.0	21.1	20.3	18.4	17.7	19.3	19.5	17.4	17.4	17.8	18.0	18.5	18.9	18.4	17.0	17.2	17.6	18.2	18.8	20.0	20.3	18.4	17.0
1995	Max.	18.9	17.7	18.9	19.5	19.8	19.4	19.8	21.4	21.7	22.3	22.3	21.5	21.0	18.0	18.0	19.4	19.4	17.5	17.5	19.0	21.0	21.2	18.3	15.6	16.6	16.8	16.0	16.5	16.7	16.6	14.4
	Min.	17.3	15.6	16.3	18.1	18.6	18.1	17.8	19.4	20.0	20.8	21.0	20.7	17.9	16.3	16.3	17.0	17.6	15.7	15.9	16.3	19.0	18.5	15.7	14.5	14.4	16.1	14.9	14.4	15.6	14.6	13.6
1996	Max.	22.1	21.7	20.5	22.5	23.3	24.3	24.7	24.6	24.2	23.4	23.6	23.0	22.5	21.8	20.3	20.2	20.6	21.7	21.6	20.4	20.3	21.0	21.5	20.5	21.2	20.6	20.2	20.7	19.9	20.0	19.0
	Min.	20.4	20.3	19.5	20.1	21.9	22.0	22.6	23.0	21.8	21.3	22.0	21.5	21.0	20.1	19.1	18.6	19.5	20.5	19.8	18.9	19.2	19.1	19.4	19.8	19.2	19.3	19.0	18.2	18.5	18.4	17.6
1997	Max.	21.5	21.0	22.4	21.3	20.1	20.1	20.3	20.1	21.4	21.8	23.0	22.0	19.5	18.6	19.6	18.9	18.2	17.5	16.5	18.0	18.9	18.3	18.3	18.6	18.4	18.7	19.8	19.6	19.2	16.9	16.4
	Min.	18.6	18.9	19.0	19.5	18.8	18.5	17.9	17.4	17.9	19.6	19.9	19.9	18.0	17.1	16.6	17.0	16.7	16.4	14.8	14.1	14.8	15.6	15.9	16.5	17.1	17.1	17.1	17.5	17.0	16.1	14.6
1998	Max.	23.0	22.5	23.6	23.3	23.0	23.3	23.1	22.9	23.0	24.5	24.1	21.3	21.0	21.1	21.5	21.9	21.9	20.9	21.0	20.9	20.3	20.3	20.2	20.1	19.9	17.5	17.4	17.4	16.8	16.3	17.5
	Min.	19.8	19.3	19.5	19.9	20.9	20.0	20.9	20.5	21.1	21.1	21.4	19.4	18.8	17.9	18.1	19.1	19.4	19.8	19.6	18.9	18.2	18.5	18.0	18.4	17.6	16.9	16.2	16.1	15.6	15.3	15.3
1999	Max.	22.9	24.0	23.8	23.4	23.1	21.8	21.5	20.9	19.6	18.5	19.4	18.6	20.0	20.1	19.6	19.1	20.1	19.5	18.5	19.1	19.1	18.5	19.3	18.9	19.0	18.7	19.4	20.4	20.5	19.4	19.2
	Min.	21.6	20.9	20.7	20.6	21.2	20.5	19.8	19.3	17.5	16.6	15.9	16.5	17.5	18.9	18.5	17.2	17.4	18.7	17.4	16.4	17.9	18.3	18.3	17.1	18.0	17.0	17.6	19.3	19.3	17.7	16.9

Appendix 7d. Maximum and minimum water temperatures (°C) measured at the fishway in Lower Terra Nova River for the month of September, 1985-99.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1985	Max.	13.3	13.3	13.3	13.3	14.3	14.3	14.3	14.3	13.3	13.8	13.8	13.3	13.3	13.3	13.3	13.3	13.3	13.8	14.8	15.3	16.3	16.3	14.3	13.3	13.3					
	Min.	13.3	12.8	13.3	13.3	13.3	14.3	14.3	13.3	13.3	13.3	13.3	12.8	12.8	13.3	13.3	12.3	12.3	12.3	13.8	14.8	15.3	14.3	12.8	12.3	12.3					
1986	Max.																														
	Min.																														
1987	Max.	17.7	17.5	17.2	16.2	14.5	14.3	14.2	13.6	13.1																					
	Min.	15.2	16.3	15.3	14.5	13.9	13.5	13.8	13.2	12.5																					
1988	Max.	21.3																													
	Min.	19.4																													
1989	Max.																														
	Min.																														
1990	Max.	17.9	16.5	15.1	14.3	15.2	15.7	15.0	13.3	12.6	13.1	13.0	12.3	11.3																	
	Min.	15.4	14.6	13.2	12.1	12.4	12.7	13.1	11.6	10.2	11.4	11.1	10.8	9.7																	
1991	Max.	14.4	12.8	14.1	16.0	16.1	15.6	15.3	14.8	14.1	12.3	11.9	12.1	12.1	11.9	12.7	13.6	15.6	15.6												
	Min.	12.6	11.3	11.3	12.8	14.3	15.1	14.9	14.0	12.3	11.6	11.4	11.5	11.5	10.8	10.9	12.7	13.6	14.1												
1992	Max.																														
	Min.																														
1993	Max.	22.0	21.9																												
	Min.	20.3	20.8																												
1994	Max.																														
	Min.																														
1995	Max.																														
	Min.																														
1996	Max.	18.9	18.6	17.9	18.7	17.9																									
	Min.	17.0	16.4	14.9	15.0	16.4																									
1997	Max.	16.4	17.5	17.2	17.5	17.5	17.4	18.1	18.3	16.2	14.2	15.2	16.3	16.3	16.3	16.6	16.4	15.7	15.1	15.6	16.5	16.5	15.4	13.6	12.6	11.8					
	Min.	13.6	14.9	15.6	16.2	15.9	16.5	16.8	16.3	14.3	13.3	13.4	14.6	15.8	15.9	15.9	15.6	14.6	13.9	14.9	15.6	15.1	13.7	12.6	11.4	10.9					
1998	Max.	18.0	17.9	16.0	15.9	14.6	14.3	14.3	16.8	17.5	18.0	18.0	17.8	17.3	16.7	16.3	15.3	13.9													
	Min.	15.4	15.6	14.9	14.6	13.4	12.4	13.4	13.6	16.6	17.1	17.5	17.1	15.8	15.8	15.4	13.3	12.3													
1999	Max.	20.7	21.0	20.2	17.9	17.5	16.9	17.5	17.3																						
	Min.	17.9	19.5	17.7	16.5	17.0	16.2	16.1	16.3																						

Appendix 8a. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of April, 1984-99.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.																														
	Min.																														
1985	Max.																														
	Min.																														
1986	Max.																			5.2	4.0	6.5	8.6	10.5	10.3	11.2	12.2	11.6	12.0	11.2	11.1
	Min.																			2.9	3.2	3.7	6.0	7.6	9.2	9.2	10.5	10.3	8.8	10.3	7.1
1987	Max.																														
	Min.																														
1988	Max.																				5.1	4.9	5.0	5.1	6.3	5.0	5.4	7.4	7.4	9.2	6.5
	Min.																				4.8	4.4	4.4	4.3	4.2	4.6	4.0	3.8	4.9	5.0	6.1
1989	Max.					2.2	2.4	2.5	2.8	3.3	3.5	3.3	4.6	4.3	3.6	5.1	3.4	5.6	5.4	4.4	5.7	4.6	4.4	5.9	7.0	6.8	7.8	6.9	7.5	8.0	9.4
	Min.					2.2	1.8	1.7	1.8	1.7	2.4	2.5	2.0	2.7	2.4	1.7	2.7	2.6	2.9	3.8	2.9	3.8	3.8	3.4	4.2	4.7	4.7	5.2	5.0	5.0	5.4
1990	Max.											3.6	4.9	6.2	6.1	5.2	4.6	4.4	5.7	6.9	7.6	5.7	5.0	4.9	6.3	6.7	7.1	6.6	7.8	8.1	8.6
	Min.											3.1	2.5	2.5	3.2	3.7	3.9	3.5	3.3	3.0	3.7	4.9	3.7	3.4	3.8	4.9	5.1	4.9	3.7	4.1	5.2
1991	Max.								3.3	5.3	3.5	4.0	3.4	2.8	5.2	5.0	4.2	5.9	6.6	7.7	8.2	6.8	6.5	7.7	7.1	7.8	7.6	9.1	9.4	7.4	7.8
	Min.								3.2	2.5	2.9	2.8	2.0	1.3	1.1	2.0	2.5	2.3	3.0	4.3	5.4	6.0	5.8	5.6	5.9	5.5	6.0	5.4	5.7	5.8	5.7
1992	Max.		2.2	2.3	3.0	3.7	2.8	2.2	2.1	2.5	3.7	2.8	3.2	3.3	2.6	2.5	4.6	5.6	5.5	7.1	7.0	6.2	5.1	4.5	4.8	4.9	6.8	3.7	3.6	4.3	6.3
	Min.		2.1	1.2	1.9	2.1	2.3	1.7	1.2	1.0	1.2	1.7	0.8	1.9	1.3	0.8	0.8	1.4	2.1	2.6	3.7	4.3	4.6	3.4	2.8	2.5	2.0	2.2	2.9	2.6	2.4
1993	Max.																				6.6	6.4	6.2	6.7	6.7	7.6	6.8	6.1	5.5	4.9	5.8
	Min.																				6.1	5.4	5.8	5.5	5.6	4.9	5.7	5.6	4.4	4.1	4.6
1994	Max.													3.7	4.4	6.1	5.8	5.0	4.7	4.5	5.3	6.7	7.4	7.4	6.9	7.5	8.3	6.0	6.8	5.7	8.4
	Min.													3.4	2.3	3.3	4.1	4.6	3.3	3.2	3.9	4.2	5.1	4.9	4.6	4.5	4.8	5.3	4.3	4.6	4.1
1995	Max.																														
	Min.																														
1996	Max.																									7.5	10.6	11.9	11.6	10.4	11.8
	Min.																									7.5	6.0	6.9	9.0	9.0	8.9
1998	Max.																														
	Min.																														
1999	Max.																												6.4	6.2	8.6
	Min.																												5.7	5.5	5.2

Appendix 8b. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of May, 1984-99.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.																															
	Min.																															
1985	Max.																															
	Min.																															
1986	Max.	10.3	10.7	10.1	10.9	9.1	7.4	7.0	6.6	7.8	7.0	8.8	7.3	8.3	10.9	13.2	14.1	14.0	14.3	12.8	11.5	9.3	9.3	11.1	13.2	11.1	11.5	12.9	13.1	12.7	13.3	12.1
	Min.	8.5	9.1	9.4	7.9	7.9	6.3	6.0	5.3	5.5	4.9	5.0	5.3	5.1	5.1	6.3	8.9	9.5	9.5	11.0	10.3	8.5	8.7	8.5	8.5	9.9	8.1	8.7	10.9	11.4	10.2	10.6
1987	Max.																											13.4	12.7	12.6	12.6	14.0
	Min.																											6.8	7.2	8.2	7.1	6.4
1988	Max.	7.2	6.6	6.1	5.7	6.7	8.2	7.2	7.1	7.6	8.1	9.2	11.9	11.8	11.7	12.3	13.2	14.3	14.9	13.5	16.1	16.5	17.1	14.8	15.6	14.0	13.1	15.1	16.4	16.0	14.0	16.0
	Min.	5.6	5.7	5.5	5.2	5.3	5.6	6.7	6.1	6.0	7.0	7.0	8.2	10.4	10.4	9.9	9.1	9.9	10.4	11.6	11.0	12.8	13.2	13.3	13.2	13.2	12.0	12.0	11.0	11.8	11.5	10.3
1989	Max.	9.3	8.3	9.4	8.8	10.8	11.6	10.2	10.2	10.0	13.5	15.0	12.2	12.3	11.3	10.6	11.4	13.1	13.6	12.4	13.3	11.8	14.5	17.4	17.2	15.0	17.1	14.8	13.0	16.5	16.5	18.1
	Min.	6.5	7.0	6.3	6.7	6.4	6.9	8.0	8.6	8.5	8.6	9.2	9.5	7.1	8.6	9.0	8.6	8.7	6.9	8.5	8.4	8.9	9.5	11.2	11.8	13.0	12.1	13.1	12.0	11.1	12.7	12.9
1990	Max.	7.2	6.8	7.4	9.2	6.2	4.9	5.8	8.1	10.0	7.7	7.5	9.7	9.9	9.6	10.1	10.2	11.1	8.2	7.5	8.2	8.9	8.0	7.3	9.5	11.3	13.8	14.8	15.8	11.6	10.7	11.5
	Min.	5.8	6.2	5.5	5.3	4.5	4.0	3.6	4.1	5.7	6.0	6.3	5.8	6.4	7.5	7.7	6.9	6.1	6.6	6.4	6.4	6.8	6.9	6.2	5.4	6.0	7.4	8.3	8.4	10.0	9.2	8.2
1991	Max.	9.9	8.9	9.6	10.6	10.1	9.1	7.7	9.4	11.0	12.1	11.4	9.1	8.6	11.1	9.8	10.6	8.4	11.2	12.1	12.4	9.6	8.4	10.8	7.9	10.1	11.4	12.4	9.4	7.6	7.7	9.4
	Min.	5.3	6.4	6.8	7.6	8.5	7.8	6.9	6.6	7.3	7.9	8.7	8.4	7.4	6.2	7.5	7.4	6.1	5.8	6.4	7.4	7.4	6.3	6.4	6.9	6.3	7.4	7.8	7.9	6.5	5.8	5.7
1992	Max.	4.3	6.0	5.3	4.6	6.6	6.9	8.3	8.4	8.7	7.4	7.8	8.3	10.1	9.7	11.4	12.1	14.1	12.0	10.0	11.1	10.7	14.2	12.1	14.8	11.9	11.8	11.0	9.8	12.6	14.9	16.8
	Min.	3.9	3.6	4.6	3.8	4.3	5.1	5.7	6.2	6.1	6.0	5.3	5.9	6.7	8.6	8.8	9.0	9.6	9.7	8.8	8.1	8.4	8.4	8.6	9.1	9.4	8.2	8.4	8.9	8.2	9.5	10.4
1993	Max.	5.9	5.5	5.2	5.5	7.1	6.9	9.0	7.3	5.5	5.6	7.8	10.0	8.4	8.1	7.5	10.8	10.3	11.3	10.3	9.3	9.4	9.1	9.4	10.3	11.9	10.8	11.9	11.8	10.6	10.7	11.6
	Min.	5.1	3.8	4.0	4.3	4.9	5.8	5.0	5.7	4.2	3.0	3.0	3.9	5.8	6.3	6.9	7.1	8.1	7.3	8.3	7.9	8.8	8.6	8.7	8.4	9.1	9.4	9.2	10.1	9.3	8.4	8.1
1994	Max.	6.6	8.6	9.4	10.1	7.3	6.6	8.1	6.8	8.3	7.6	9.9	8.6	9.4	8.9	7.9	10.1	9.1	7.8	8.4	9.9	11.9	8.6	11.6	12.6	9.3	8.4	8.6	9.1	12.3	12.1	11.5
	Min.	5.2	5.6	5.2	5.7	6.7	6.1	5.3	6.1	5.8	7.2	6.2	7.0	6.7	7.8	7.3	7.2	8.1	6.9	6.7	6.8	7.4	7.6	7.6	6.8	7.9	7.9	8.1	7.6	8.0	9.9	9.5
1995	Max.																															
	Min.																															
1996	Max.	14.3	15.6	12.0	12.9	11.1	9.1	10.3	10.7	11.0	12.4	8.9	7.8	7.2	8.0	7.4	6.8	9.2	10.1	12.5	12.6	9.8	11.8	11.6	12.0	13.6	11.3	14.1	11.8	14.9	11.2	11.1
	Min.	9.6	11.1	10.6	9.4	8.4	7.4	7.3	6.6	6.8	6.8	7.8	6.6	6.4	6.1	6.6	6.1	5.9	7.8	8.4	8.8	9.0	8.9	9.8	9.0	9.2	8.3	8.1	9.2	8.8	9.6	9.6
1998	Max.																															
	Min.																															
1999	Max.	9.8	9.1	11.4	12.9	16.0	16.1	15.9	17.5	17.5	14.8	14.7	13.9	12.1	11.1	14.8	16.9	16.9	18.0	19.8	19.5	16.4	15.3	14.3	13.6	12.4	11.3	10.9	10.7	13.9	14.9	17.0
	Min.	5.9	6.3	6.3	7.8	9.6	10.6	11.5	10.9	11.9	12.1	9.8	9.4	9.6	8.1	8.4	8.7	10.1	10.8	12.4	13.2	14.4	13.8	13.0	11.9	11.2	10.3	10.5	10.0	10.0	11.7	11.8

Appendix 8c. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of June, 1984-99.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.																													13.2	14.1
	Min.																													10.6	12.2
1985	Max.																												16.6	15.1	14.1
	Min.																												15.6	13.6	11.1
1986	Max.	13.4	12.0	11.6	11.8	9.9	11.8	13.1	14.4	11.3	11.8	10.8	11.6	13.6	11.7	12.6	16.9	14.5	12.0	13.5	14.4	13.1	17.3	17.2	15.6	14.1	13.7	15.0	17.5	14.4	11.5
	Min.	10.6	11.3	10.8	9.2	9.5	8.9	9.6	10.1	10.4	10.1	10.2	8.7	8.9	10.5	9.7	11.0	12.3	9.9	10.3	11.7	12.2	12.1	14.1	13.9	13.0	12.9	11.2	12.1	11.0	11.0
1987	Max.	12.6	11.1	13.7	15.4	14.7	16.1	17.7	15.3	11.3	11.0	11.0	14.3	14.7	12.8	12.7	14.6	16.4	14.8	16.7	15.3	17.7	17.0	17.3	17.2	14.2	13.7	16.2	16.2	11.2	17.6
	Min.	8.8	8.8	7.1	8.7	7.8	7.8	10.2	10.8	7.7	8.9	9.7	8.9	10.0	9.4	10.2	9.5	9.8	11.4	8.1	10.7	9.8	10.7	9.1	10.6	10.2	9.3	9.3	9.3	10.0	10.6
1988	Max.	12.2	11.5	11.4	13.2	10.8	10.9	10.5	10.6	11.6	10.7	11.7	11.2	12.5	13.5	13.0	14.4	16.8	14.0	13.9	13.8	13.3	15.0	13.3	15.1	15.6	13.8	13.2	13.4	13.4	12.9
	Min.	10.2	10.2	9.8	9.4	10.1	9.3	9.9	9.3	9.1	10.4	9.8	10.6	10.6	11.3	11.8	11.7	12.9	12.6	11.4	12.7	12.5	12.3	12.9	12.5	12.8	12.8	12.3	12.7	12.8	12.2
1989	Max.	15.7	12.1	13.8	13.1	16.0	14.5	17.3	15.7	17.1	15.2	12.5	14.4	13.0	16.7	17.3	19.0	17.7	15.7	14.2	12.9	15.0	14.3	15.6	17.3	15.5	16.3	18.5	17.6	19.3	19.8
	Min.	12.2	10.9	10.5	11.7	11.0	13.1	12.9	13.2	11.5	12.1	11.5	11.2	10.3	9.9	11.0	11.6	13.2	13.8	11.7	11.3	12.0	13.0	12.5	13.7	14.7	14.0	14.9	15.4	14.6	14.5
1990	Max.	13.2	14.5	16.8	12.8	11.4	12.5	11.5	11.4	12.2	12.8	10.6	15.0	13.2	15.4	15.1	14.0	12.9	13.1	13.7	13.1	12.0	13.1	13.9	12.2	16.0	15.9	15.1	18.2	15.1	16.3
	Min.	8.2	9.6	11.1	11.1	9.9	9.6	9.1	8.5	10.1	9.8	9.2	9.0	10.5	11.6	12.5	12.0	11.5	11.9	12.6	12.1	11.4	10.8	11.1	11.4	11.1	13.1	13.4	13.2	13.6	13.2
1991	Max.	9.6	11.1	13.8	12.6	9.4	12.1	13.3	14.9	13.3	15.6	13.0	12.3	12.7	11.9	14.9	16.7	18.5	15.9	14.8	18.8	16.5	18.2	20.5	17.6	18.0	18.3	16.4	14.4	14.6	17.8
	Min.	7.2	7.4	8.5	9.3	7.4	7.8	8.9	9.8	9.7	9.4	11.0	11.0	10.9	10.4	9.3	9.4	10.4	11.5	11.6	12.4	12.9	11.0	12.4	13.4	9.6	11.1	13.3	12.6	11.8	10.6
1992	Max.	14.8	18.0	16.3	15.9	17.0	16.4	16.2	14.5	13.8	16.4	16.8	17.5	17.6	19.3	19.2	17.4	14.0	12.8	14.4	13.3	15.5	16.2	15.9	18.0	20.6	17.9	18.1	17.9	16.7	18.5
	Min.	13.7	13.1	14.0	12.6	10.4	10.8	11.3	12.5	12.7	12.1	12.7	11.5	12.6	13.4	14.5	13.0	12.3	10.7	11.0	11.6	11.8	13.2	12.7	13.5	15.4	14.6	14.3	14.6	14.8	12.0
1993	Max.	10.1	13.0	13.9	12.3	15.7	14.4	10.8	10.6	11.7	13.9	11.4	12.1	13.6	15.7	12.6	17.5	17.4	15.6	17.4	17.1	14.9	13.8	12.4	13.2	13.3	13.6	14.4	13.2	12.6	12.6
	Min.	8.6	8.7	9.8	10.4	9.3	9.8	9.9	9.3	9.3	7	9.8	8.7	8.9	9.4	11.3	10.8	13.2	13.9	13.5	12.5	11.9	12.6	10.5	9.7	10.6	10.8	11.1	12.4	12.1	11.3
1994	Max.	10.9	10.4	8.9	12.2	12.3	11.6	10.9	10.6	10.2	11.9	14.4	16.5	17.1	14.8	18.6	17.5	17.8	16.2	18.5	19.1	16.3	18.0	18.7	19.1	16.5	17.6	17.0	15.1	17.4	20.2
	Min.	9.9	8.9	8.1	7.8	8.9	9.4	9.8	9.5	9.1	8.6	8.9	9.9	12.7	13.1	12.8	14.1	13.8	14.3	12.5	13.3	13.6	13.4	13.9	13.6	13.6	13.1	13.4	13.2	14.3	14.6
1995	Max.											17.1	14.6	15.9	15.6	18.1	18.0	16.0	16.1	14.4	14.1	17.7	19.1	17.9	15.4	19.5	20.1	20.8	21.2	21.5	18.5	18.5	19.9	17.4	19.5	19.0	17.3
	Min.											14.6	11.2	11.3	10.6	11.6	13.2	12.7	12.4	13.3	12.9	12.9	13.6	13.8	13.5	12.6	12.8	13.9	14.2	14.9	16.6	14.8	13.8	12.3	13.4	13.9	13.9
1996	Max.	11.2	13.3	14.4	13.6	12.9	12.4	15.9	13.6	15.7	16.9	14.5	17.1	15.9	15.9	14.6	13.4	16.1	16.9	18.0	17.0	13.9	15.3	17.9	18.4	19.6	16.0	12.7	14.4	16.3	17.0
	Min.	9.1	9.1	9.5	10.6	11.6	11.6	10.9	12.1	11.2	11.1	12.0	10.9	12.1	12.6	13.6	12.6	11.7	11.4	11.6	12.6	10.8	10.5	10.5	11.7	11.7	12.6	11.1	10.8	12.3	13.7
1998	Max.														19.5	20.9	21.6	17.5	19.5	17.5	17.5	16.6	19.3	19.9	20.5	21.0	20.0	18.5	17.2	16.0	18.8	16.4
	Min.														14.6	13.1	14.1	15.2	14.4	15.4	15.4	15.2	13.1	13.4	13.9	15.4	16.5	16.6	13.4	11.6	12.9	14.6
1999	Max.	14.9	15.1	14.9	14.8	16.6	13.7	13.1	14.6	15.4	16.0	18.0	20.0	21.1	20.2	19.2	17.3	16.8	15.1	17.0	19.5	20.8	17.6	17.1	16.9	19.7	16.8	20.6	17.4	15.0	17.9
	Min.	14.0	12.7	13.3	11.8	11.4	12.1	11.4	10.5	10.8	11.6	11.8	13.9	15.1	17.2	16.5	14.1	14.9	13.7	12.8	14.5	15.3	15.9	14.9	13.9	14.3	15.4	14.6	14.9	13.5	13.4

Appendix 8d. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of July, 1984-99.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	15.5	18.4	18.6	16.4	16.3	16.4	19.9	19.3	19.2	18.6	17.7	17.5	17.1	21.4	19.6	20.0	18.7	19.2	18.6	19.2	21.1	19.6	20.4	18.3	19.7	21.1	21.3	19.7	18.9	17.3	19.6
	Min.	13.2	14.1	13.9	14.8	13.4	14.3	14.1	17.9	17.5	17.2	16.9	16.1	16.2	16.0	17.9	15.1	16.4	16.3	16.7	16.7	16.8	18.0	17.0	16.4	16.3	15.7	16.4	18.0	16.7	15.4	15.9
1985	Max.	12.1	14.6	16.6	16.6	17.6	20.7	18.6	16.6	15.1	14.6	15.6	15.1	16.6	18.6	17.6	16.1	16.6	16.6	15.6	15.1	16.6	16.1									
	Min.	10.6	10.6	12.6	14.1	14.6	14.6	16.6	15.6	14.1	13.6	13.6	14.6	14.1	14.6	16.1	15.1	15.1	15.1	15.1	14.1	13.6	14.6									
1986	Max.	12.5	13.1	11.8	13.8	12.8	12.4	13.3	13.5	14.3	15.0	16.4	15.3	16.7	19.9	17.2	15.4	16.4	19.3	21.1	19.0	16.4	16.4	18.5	19.5	17.9	19.3	20.7	20.6	16.6	13.6	12.3
	Min.	10.7	10.9	11.5	11.3	12.1	11.7	10.5	11.0	12.0	12.0	12.8	12.5	13.1	13.9	13.9	13.3	13.1	13.4	16.0	16.6	15.2	14.2	14.0	15.1	14.8	15.3	16.1	16.0	14.7	12.7	12.1
1987	Max.	17.2	20.0	18.9	16.5	14.8	12.3	16.2	21.0	21.4	20.7	19.7	20.2	20.1	21.4	19.7	17.7	21.3	20.7	18.4	19.9	19.3	19.2	19.6	21.0	19.8	20.6	19.8	19.4	20.8	21.6	22.8
	Min.	12.3	11.6	10.2	9.8	11.4	9.9	9.1	13.1	14.1	15.6	15.4	13.8	16.3	16.4	16.3	15.3	15.2	13.9	14.0	12.6	13.7	12.0	10.7	15.0	15.2	14.9	15.7	14.5	15.2	13.9	15.8
1988	Max.	12.9	13.3	13.5	15.6	15.5	18.2	16.1	15.1	16.1	19.2	17.6	14.8	14.6	15.0	15.5	18.5	15.9	17.8	19.6	17.7	18.5	16.8	17.8	17.1	15.9	13.4	13.7	15.7	16.2	17.3	16.5
	Min.	12.1	12.7	12.9	12.6	14.2	14.1	14.1	13.3	14.9	15.0	14.9	14.6	14.3	13.7	13.7	14.3	14.9	14.3	15.6	17.2	16.8	15.6	16.0	15.9	13.5	12.8	12.8	13.2	14.2	15.1	15.5
1989	Max.	20.2	17.8	21.3	21.2	19.7	18.1	16.2	14.5	14.8	14.6	14.7	16.5	17.1	15.7	18.0	18.0	17.1	16.7	18.3	19.9	17.6	19.6	21.6	18.8	19.3	19.1	17.6	17.4	17.3	19.0	20.6
	Min.	15.0	14.9	14.1	15.2	16.5	16.2	13.7	13.8	13.7	14.1	14.3	14.0	14.4	14.6	14.5	15.4	15.3	14.7	15.2	15.7	15.8	14.8	15.2	16.0	15.0	15.9	16.2	16.2	15.7	15.9	16.0
1990	Max.	15.0	14.0	16.3	13.6	17.9	18.6	15.1	19.1	14.7	15.9	17.3	17.9	19.4	20.9	21.4	17.2	19.6	17.6	18.1	16.5	21.8	22.6	19.0	23.2	22.7	23.2	23.1	22.9	23.2	23.0	22.2
	Min.	13.7	12.8	12.6	12.7	11.5	11.9	12.8	12.0	13.1	12.4	13.0	13.3	13.5	13.4	14.5	14.6	14.5	15.6	14.9	15.0	14.5	15.8	16.6	16.8	18.7	17.8	15.8	17.2	16.2	14.8	16.1
1991	Max.	15.6	18.6	19.1	19.5	20.9	21.4	19.0	16.8	20.2	19.9	19.6	20.8	17.5	16.5	21.0	21.1	18.1	18.0	19.0	21.7	19.2	20.7	17.4	20.6	22.1	19.1	18.1	22.6	22.0	23.3	20.8
	Min.	11.9	11.4	11.6	13.2	13.6	14.3	14.9	14.1	13.9	14.4	14.9	14.8	14.8	14.4	15.1	15.4	15.6	15.2	14.6	15.8	16.5	15.2	15.0	15.0	15.5	16.5	16.0	15.8	16.3	14.9	16.1
1992	Max.	16.7	15.2	13.7	13.1	16.8	13.5	12.5	13.0	14.4	13.8	12.2	14.7	15.2	16.0	14.8	17.1	17.8	19.3	16.5	17.5	17.2	16.4	17.7	17.1	20.2	20.1	20.5	18.9	17.0	17.6	19.5
	Min.	13.3	13.7	12.4	11.2	10.2	12.5	11.2	10.8	11.9	11.9	11.5	11.8	12.7	12.8	13.1	13.1	13.2	13.1	14.6	13.6	15.0	14.7	14.3	14.8	14.7	15.7	15.5	16.1	14.9	15.5	15.9
1993	Max.	15.9	17.1	15.6	12.4	12.4	15.1	15.6	16.6	15.4	18.0	16.0	19.1	17.0	16.2	14.9	14.1	16.3	15.1	16.1	16.5	15.5	14.3	13.8	13.1	14.9	16.3	17.1	16.8	16.5	16.1	15.9
	Min.	11.6	12.7	12.8	10.8	11.4	11.5	12.8	14.0	14.4	13.8	14.2	13.6	14.9	14.0	13.6	12.9	13.1	13.8	13.2	13.3	13.4	12.5	12.9	12.5	11.9	12.4	13.2	13.6	14.4	14.9	14.2
1994	Max.	18.5	17.3	19.9	19.4	17.0	17.1	18.9	17.5	15.6	15.4	20.0	19.6	17.6	22.4	19.9	17.0	19.6	18.6	19.6	20.1	18.7	19.5	20.1	18.3	16.8	16.5	18.4	21.4	21.8	23.1	21.8
	Min.	15.4	15.9	15.1	14.0	14.4	14.5	13.7	13.4	13.7	13.9	14.0	14.1	14.8	15.1	15.9	15.8	14.4	15.0	15.6	15.9	16.3	15.8	16.3	16.1	14.4	15.3	16.0	17.4	18.7	17.4	19.1
1995	Max.	14.7	15.3	18.9	20.4	21.1	21.4	22.6	23.9	21.4	20.0	22.9	24.0	22.5	22.5	20.5	19.4	20.1	17.1	15.7	19.7	18.8	20.9	17.9	21.3	23.2	21.1	21.5	23.0	18.6	20.8	20.3
	Min.	14.1	13.8	14.1	14.8	17.3	16.9	17.2	19.0	19.5	18.6	18.5	19.8	18.6	18.3	18.2	15.9	15.1	14.3	13.9	14.3	16.2	15.7	15.7	16.3	16.9	18.1	17.8	16.6	16.1	16.6	17.8
1996	Max.	15.2	14.6	15.9	15.4	13.4	14.2	13.8	16.6	18.6	17.4	17.6	19.8	21.5	18.3	17.1	16.2	15.1	16.4	18.5	16.9	15.9	16.3	17.1	18.0	17.6	19.1	18.0	20.1	17.8	18.6	19.7
	Min.	14.1	13.7	13.6	13.4	13.0	12.9	13.1	12.2	14.1	15.0	14.1	14.4	15.6	16.5	14.3	14.3	13.9	14.1	14.4	15.5	15.1	14.5	14.6	15.1	15.4	15.4	16.5	16.1	16.1	16.2	16.1
1998	Max.	14.8	14.4	17.5	15.9	13.9	14.9	18.5	17.6	14.1	14.1	14.4	15.6	18.7	19.1	21.5	23.0	20.8	18.5	20.5	18.9	19.0	19.3	18.0	17.8	19.8	21.2	21.0	22.0	19.9	19.5	18.8
	Min.	12.1	12.4	12.5	13.9	13.1	13.1	13.6	13.1	12.4	13.1	13.1	13.3	13.8	15.1	15.7	18.0	18.8	15.4	16.1	16.6	16.2	16.5	15.1	16.4	15.6	17.1	17.6	17.5	18.4	17.9	17.4
1999	Max.	19.6	18.8	18.5	17.5	18.7	17.5	19.0	19.1	20.9	20.1	21.1	21.3	19.5	18.8	19.6	19.8	18.2	17.5	18.3	20.6	21.9	21.8	20.8	24.1	24.0	21.0	20.1	21.6	21.0	23.1	21.0
	Min.	15.1	16.5	15.2	16.1	14.9	14.4	14.9	16.4	15.9	16.9	17.6	17.3	16.6	15.4	16.5	16.3	16.6	15.8	15.9	14.9	14.9	16.5	17.5	18.0	19.4	18.9	17.9	17.3	18.0	18.7	19.6

Appendix 8e. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of August, 1984-99.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	18.9	18.0	20.0	21.4	19.8	21.1	21.0	20.7	22.2	21.1	19.1	18.9	20.0	20.1	21.1	21.5	20.4	20.5	19.6	17.7	17.1	17.1	18.5	18.1	17.5	16.6	17.4	18.1	19.4	19.3	18.3
	Min.	17.6	17.5	16.4	17.4	18.6	17.8	18.3	19.1	19.5	15.6	17.5	18.0	17.8	18.7	17.1	16.7	18.2	19.1	17.9	16.9	16.5	15.5	15.6	16.9	16.4	15.7	15.2	16.2	16.2	17.8	17.6
1985	Max.																															
	Min.																															
1986	Max.	12.5	13.5	17.6	16.7	17.4	18.4	19.3	17.7	19.1	17.6	17.9	18.5	20.2	20.4	20.2	20.2	21.4	21.6	21.1	18.7	16.5	17.9	16.4	16.3	14.7	16.4	18.2	15.1	15.8	15.8	17.0
	Min.	12.0	12.6	13.0	15.4	15.2	15.7	15.9	16.6	16.0	16.8	15.7	16.8	16.9	15.9	16.6	17.3	17.6	17.3	18.5	15.6	14.6	13.8	14.6	14.0	13.5	14.1	13.9	14.5	15.1	14.3	13.8
1987	Max.	20.4	17.4	16.5	17.0	19.8	19.2	20.9	20.5	18.2	18.8	19.8	17.9	13.4	18.1	16.8	16.9	14.2	14.0	18.2	20.0	18.8	20.3	18.2	18.9	17.4	17.2	16.8	16.1	17.4	15.7	16.4
	Min.	15.8	14.4	14.3	13.9	14.9	15.8	15.0	12.5	12.2	12.0	12.5	12.7	11.3	10.2	14.3	13.2	12.8	12.6	13.5	16.2	15.5	14.3	13.6	15.6	11.9	11.8	13.3	10.4	10.6	13.3	11.7
1988	Max.	17.6	16.9	19.0	18.9	19.8	19.2	16.5	17.2	19.0	18.9	21.0	19.8	22.6	19.8	17.9	16.7	15.8	14.0	15.4	16.2	16.3	16.7	15.8	16.8	18.5	18.8	17.0	19.1	18.5	18.8	18.1
	Min.	15.0	15.9	15.2	14.5	16.6	16.8	15.1	15.6	16.5	17.0	17.3	16.0	17.7	17.8	15.4	15.2	14.4	13.5	13.4	14.2	14.8	14.9	14.3	13.5	13.9	14.6	14.7	16.0	17.1	16.9	17.3
1989	Max.	21.4	22.1	22.5	19.3	20.8	20.2	19.7	19.2	22.3	22.2	23.1	20.5	19.3	22.3	22.1	22.7	20.8	21.6	23.0	20.4	17.5	18.9	17.9	17.1	16.4	16.9	16.7	18.1	18.7	16.1	16.6
	Min.	16.4	16.4	16.5	16.4	17.2	17.6	18.3	17.7	16.3	17.3	17.3	18.5	17.1	17.8	17.9	17.4	17.8	16.4	17.4	17.1	16.7	16.5	16.7	16.1	15.0	14.4	13.9	13.3	14.4	15.2	14.6
1990	Max.	18.2	15.0	15.3	16.1	17.8	17.1	19.1	18.7	19.0	19.7	18.5	19.8	20.3	19.5	18.9	20.3	21.1	19.1	19.3	18.7	19.0	20.0	19.2	19.5	21.2	18.3	16.6	16.8	18.3	20.0	19.9
	Min.	14.4	12.4	11.7	12.6	12.8	15.4	15.6	17.3	16.7	15.5	16.7	16.6	18.0	17.0	16.3	16.8	17.6	17.5	15.4	14.6	14.6	14.7	14.7	13.6	15.6	15.6	15.5	15.6	16.1	16.7	15.7
1991	Max.	18.6	17.9	16.6	15.9	15.3	18.1	18.3	21.0	21.0	19.0	17.5	19.4	18.5	21.3	19.6	22.0	20.9	21.8	20.8	20.5	18.5	18.4	17.4	19.0	19.5	17.5	20.0	20.1	18.5	17.6	16.6
	Min.	15.4	15.5	13.9	13.9	13.4	12.7	13.2	13.9	14.1	14.8	15.0	15.6	15.9	16.1	17.3	15.9	17.1	17.4	16.5	16.0	15.8	16.3	15.8	13.3	13.2	14.9	13.6	14.6	15.8	15.6	15.4
1992	Max.	19.0	17.1	16.7	17.3	16.9	16.6	18.0	19.9	21.4	20.9	18.5	17.6	20.1	17.6	20.9	21.5	17.9	20.6	19.2	18.7	19.3	18.1	17.2	16.7	19.0	19.3	16.0	17.1	16.6	15.8	18.9
	Min.	15.8	15.0	13.9	14.4	15.5	15.2	14.8	14.9	16.5	16.5	17.4	16.5	15.5	15.5	15.6	15.6	16.5	16.5	17.7	17.2	17.2	16.7	14.4	14.0	14.7	14.6	14.0	14.9	15.2	14.5	14.3
1993	Max.	19.5	18.4	17.0	17.9	18.1	18.5	17.5	16.4	17.2	18.0	17.3	18.6	16.6	16.1	17.1	17.4	18.6	19.9	19.8	16.6	17.5	17.8	18.5	17.1	16.7	15.6	17.0	17.5	17.6	15.9	14.3
	Min.	14.6	16.9	16.1	15.7	16.1	16.1	15.2	14.4	14.1	14.2	14.6	14.8	14.9	14.5	14.4	13.4	12.9	14.2	14.5	15.9	15.6	14.1	15.1	15.4	15.1	14.1	13.2	14.1	13.5	12.9	12.7
1994	Max.	21.6	20.0	21.3	20.5	19.4	21.6	20.1	19.0	18.0	19.4	20.1	20.0	17.9	20.0	20.1	21.3	20.0	19.4	22.1	19.8	19.5	18.6	20.7	21.0	21.0	19.6	18.5	20.9	19.5	19.3	19.7
	Min.	18.9	17.8	17.0	17.8	18.0	18.0	18.8	18.1	17.0	16.9	16.9	16.3	16.7	17.1	17.6	16.3	16.9	16.6	17.2	18.4	18.1	17.6	16.8	15.9	15.5	16.9	17.5	17.3	18.3	16.2	14.9
1995	Max.	22.8	20.0	22.5	22.0	23.5	22.6	25.1	24.2	26.0	26.3	24.1	23.6	22.4	23.3	21.4	23.5	21.5	23.3	23.5	19.6	23.5	22.0	18.9	17.7	21.6	19.4	20.6	21.5	18.8	16.5	16.7
	Min.	17.0	14.6	15.6	15.8	16.5	17.1	17.1	17.8	18.1	19.1	18.9	19.2	19.0	17.8	17.0	18.0	18.0	15.9	16.0	16.2	18.3	17.4	17.0	16.5	16.4	17.3	16.0	15.4	15.6	14.9	14.9
1996	Max.	21.6	19.7	18.0	20.1	20.0	24.1	23.5	23.0	19.7	18.6	21.3	23.0	21.4	19.5	20.0	21.4	19.0	20.4	19.4	19.0	20.3	21.0	21.8	19.1	21.0	22.1	22.0	21.0	19.1	17.8	17.8
	Min.	16.9	18.1	17.0	16.1	17.6	17.0	18.4	18.9	17.6	17.1	17.4	18.0	17.0	18.0	17.4	16.8	17.5	17.3	17.7	16.0	15.6	15.1	15.6	17.4	17.2	18.0	17.1	17.6	17.8	16.4	15.3
1998	Max.	20.8	21.9	23.5	24.0	23.8	23.6	23.8	23.3	23.7	23.5	21.1	20.6	21.2	23.0	22.1	24.1	21.0	19.3	21.8	21.9	22.2	22.2	21.2	18.8	16.6	17.0	17.8	18.4	16.4	15.8	16.5
	Min.	16.3	17.0	17.5	17.8	17.5	18.4	18.0	17.9	18.5	19.2	18.9	18.9	18.0	17.0	17.0	18.3	18.7	18.4	17.8	17.0	16.3	17.0	16.0	16.7	15.4	15.3	15.6	15.4	15.3	14.9	15.1
1999	Max.	20.0	24.4	24.5	24.5	21.6	21.5	23.0	20.1	21.4	20.9	23.3	20.4	19.9	22.6	20.6	22.8	23.5	20.9	20.7	22.7	19.9	18.4	23.3	20.5	23.1	21.3	19.8	21.4	19.8	18.1	20.9
	Min.	19.0	18.1	18.4	18.0	19.1	18.4	18.0	17.7	17.5	16.5	16.5	17.6	18.3	18.0	18.9	17.5	17.4	18.9	18.4	15.6	16.6	16.8	16.5	17.5	17.2	17.0	17.6	18.6	18.2	16.1	14.4

Appendix 8f. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of September, 1984-99.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.	18.7	17.5	16.2	16.8	16.9	16.2	15.8	14.9	14.3	15.4	15.9	16.2	15.3																	
	Min.	17.5	17.1	14.8	13.2	13.6	15.3	15.4	13.9	12.7	13.3	14.3	14.5	14.9																	
1985	Max.																														
	Min.																														
1986	Max.	17.5	16.0	15.2	14.5	15.1	17.1	18.5	15.4	17.5																					
	Min.	13.6	13.4	13.7	12.1	12.3	12.2	14.7	14.6	14.3																					
1987	Max.	15.2	15.3	15.8	16.2	13.3	13.9	16.7	15.2	14.6	13.9	11.7	13.8	14.3	16.0	14.6	15.5	15.6	15.1	13.9	11.9	13.3	12.3	12.8	14.0	13.9	12.9	11.5	10.4	10.6	12.2
	Min.	11.8	13.9	12.6	11.3	11.7	10.6	13.2	13.3	13.0	12.4	9.3	6.7	8.9	10.4	12.2	12.3	12.7	13.2	10.8	10.2	10.6	10.7	9.8	11.8	10.8	10.7	8.7	6.4	8.4	11.0
1988	Max.	20.1	19.1	16.9	16.1	17.3	15.5	15.3	16.3	17.0	17.0	16.7	16.4																		
	Min.	16.7	17.1	15.2	13.1	13.3	15.1	14.5	14.1	14.2	14.1	15.8	15.1																		
1989	Max.	16.3	17.0	16.8	17.3	18.0	18.4	18.4	18.0	18.7	18.8	18.5	19.4	19.8	17.5	15.2	15.4	14.7	15.3	14.1	15.6	16.3	16.4	15.9	16.5	14.8	14.4	13.1	12.5	12.3	11.7
	Min.	14.8	15.2	14.1	13.1	13.4	13.4	13.5	13.2	15.1	16.8	17.5	17.6	16.4	14.7	13.8	13.7	13.9	12.6	12.9	14.6	13.4	14.0	15.1	12.4	11.4	12.9	11.7	11.2	11.2	10.5
1990	Max.	19.0	20.2	17.4	19.7	21.1	21.4	18.4	18.9	19.1	16.0	15.0	15.5	15.8	16.5	17.4	18.4	17.7	17.2	16.5	15.2	15.1	15.3	16.0	15.0	14.3	13.3	14.1	13.4	13.8	13.3
	Min.	14.1	14.2	14.2	14.1	14.9	15.5	15.8	12.8	12.7	14.3	13.7	13.1	12.7	12.0	13.8	15.0	15.5	15.0	13.7	14.1	13.5	12.4	13.6	14.0	13.1	12.3	11.6	12.3	12.2	10.7
1991	Max.	15.2	15.1	16.4	16.9	18.9	18.3	17.0	16.5	16.0	15.4	13.4	14.4	14.7	13.6	15.9	14.4	15.1	15.8	16.0	14.5	13.6	13.7	14.2	15.1	14.4	14.3	14.4	14.3	13.9	12.0
	Min.	12.7	11.4	13.0	14.1	14.7	15.8	15.4	14.3	13.1	12.7	12.6	12.1	12.3	11.1	11.3	12.7	12.8	12.4	14.1	13.6	12.6	11.8	11.9	12.3	13.3	13.6	13.6	12.9	11.3	11.1
1992	Max.	19.8	18.1	17.0	17.0	17.9	17.6	18.3	16.6	17.2	18.4	21.3	18.5	18.2	19.3	19.8	17.7	18.9	16.8	19.1	17.4	16.2	16.2	16.2	15.2	15.6	15.9	17.0	14.8	17.1	15.1
	Min.	16.1	15.9	14.8	13.4	12.6	12.7	11.9	14.4	14.5	16.0	16.6	17.2	16.1	14.7	15.2	15.6	13.8	15.5	15.7	16.4	14.5	14.4	14.2	14.1	12.7	12.0	12.0	13.2	13.3	14.2
1993	Max.	17.5	17.4	15.9	15.6	17.2	16.9	17.3	16.1	14.9	14.2	15.4	14.8	15.1	15.8	15.6	15.8	15.8	13.2	12.9	12.2	13.6	12.9	12.6	13.1	14.1	13.2	13.3	13.3	13.0	12.9
	Min.	12.6	11.9	14.2	14.1	13.4	14.2	14.9	14.3	13.4	13.1	13.1	12.4	13.0	13.8	13.8	11.9	11.1	12.4	12.2	11.4	10.8	10.7	11.6	11.6	11.4	11.6	12.2	12.9	12.4	12.4
1994	Max.	18.4	19.5	18.6	16.4	15.5	15.3	16.9	17.5	18.4	17.4	15.9	16.9	15.8	15.9	16.1	14.5	14.0	14.8	14.6	14.6	13.4	14.4	14.3	14.2	16.1	16.7	14.4	13.1	13.1	13.3
	Min.	15.9	14.6	13.9	14.4	13.7	13.6	14.1	14.9	14.7	16.0	14.9	14.8	14.6	13.3	12.5	12.4	13.6	13.9	13.3	12.4	12.0	10.9	10.6	11.5	12.8	13.6	12.6	11.9	11.7	12.1
1995	Max.	17.7	18.7	22.1	21.6	22.9	20.5	20.0	21.6	19.1	17.5	18.4	19.9	19.0	16.6	15.8	19.1	15.1	14.4	15.9	14.6	18.5	16.3	16.0	15.6	14.9	16.0	15.4			
	Min.	14.4	15.5	15.4	16.2	16.4	15.6	15.6	16.2	16.7	15.9	14.6	13.8	14.8	15.3	13.8	12.9	12.6	12.9	12.3	12.7	13.3	14.1	14.1	12.9	12.1	12.9	13.4			
1996	Max.	19.4	17.6	17.0	17.4	20.0	20.1	17.5	16.6	16.2	17.4	18.5	17.0	16.1	16.2	14.1	15.6	16.5	15.3	14.0	14.0	15.1	15.1	14.3	12.2	12.3	10.9	10.9	11.8	12.6	13.9
	Min.	15.8	15.7	14.6	15.1	14.9	15.7	15.0	12.7	13.3	12.5	14.6	14.7	13.4	13.1	13.1	11.9	11.3	12.3	12.9	13.1	11.8	12.9	12.1	11.6	10.7	10.4	9.9	9.4	10.1	11.1
1998	Max.	18.5	17.1	15.4	14.1	14.0	13.7	12.9	13.4	13.8	13.6	14.6	15.9	15.2	15.1	13.9	13.4	13.4	13.8	13.4	14.3	12.7	12.9	13.3	13.9	13.4	12.5	11.8	11.8	12.3	12.9
	Min.	14.9	14.3	13.7	13.8	12.9	12.2	12.6	12.6	13.3	13.5	13.4	13.6	14.0	12.9	13.1	12.1	11.9	11.0	11.9	11.1	11.9	12.3	12.3	11.9	11.1	10.7	10.4	10.9	10.8	11.1
1999	Max.	22.4	22.9	19.6	18.0	19.0	18.1	18.6	17.9	17.9	18.7	18.5	21.5	20.4	20.6	19.8	19.6	18.3	17.5	17.6	15.9	17.1	18.3	17.0	18.0	16.7	14.9	15.6	15.9	16.4	15.2
	Min.	15.1	15.8	15.2	13.6	16.3	15.5	15.9	15.6	15.3	16.8	17.1	16.4	16.0	14.8	17.8	17.6	17.5	15.6	13.9	13.8	14.6	15.6	14.9	15.3	14.8	13.6	12.6	11.6	12.9	12.3

Appendix 8g. Maximum and minimum water temperatures (°C) measured at the counting fence in Northeast Brook, Trepassey for the month of October, 1984-99.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.																															
	Min.																															
1985	Max.																															
	Min.																															
1986	Max.																															
	Min.																															
1987	Max.	13.0	14.8	13.2																												
	Min.	12.1	12.6	10.0																												
1988	Max.																															
	Min.																															
1989	Max.	11.7	12.9	12.1	12.1	12.0	12.1	11.7	11.3	10.9	10.7	9.8	9.3	10.1	10.1	9.7	9.6	9.4	9.0	9.1	9.4	8.9	9.3	8.9	8.4							
	Min.	9.7	10.4	11.1	10.9	10.7	10.1	10.9	10.4	10.1	9.8	9.3	8.5	8.6	8.6	8.4	8.5	8.1	7.7	6.6	6.6	7.6	8.1	7.3	7.2							
1990	Max.	13.8	13.3																													
	Min.	12.0	12.3																													
1991	Max.	11.1	12.5	12.1	12.4	11.9	11.4	11.9	11.9	11.0	11.0	10.6	10.6	11.1	10.6	10.1	10.4															
	Min.	10.8	10.9	11.9	11.4	11.0	11.0	11.4	10.7	9.9	9.4	10.0	10.1	10.6	9.4	9.1	8.5															
1992	Max.																															
	Min.																															
1993	Max.	13.2	11.9	12.6	12.1	12.2	11.6	11.6	11.6	10.9	10.9	10.6	9.6	10.5	9.8	10.1																
	Min.	11.7	10.9	11.3	11.1	10.6	9.6	10.2	9.3	10.1	9.9	9.1	8.9	8.9	8.3	7.6																
1994	Max.	13.5	12.9	13.1	12.9	13.1	13.4	13.6	14.2	13.9	13.3	12.8	10.5	10.1	9.4	9.9	9.6	8.9	9.7	9.2	9.6	8.4	9.3	8.9	9.6							
	Min.	12.1	11.1	10.9	10.5	10.6	10.9	10.6	11.0	11.9	12.4	10.6	9.0	9.1	8.4	8.3	8.3	8.1	8.6	8.1	7.6	7.3	7.6	8.3	8.6							
1995	Max.																															
	Min.																															
1996	Max.	13.1	12.8																													
	Min.	11.1	10.4																													
1998	Max.	12.4	12.1	11.9	11.4	9.9																										
	Min.	12.0	11.1	10.4	9.9	9.5																										
1999	Max.	14.2	15.4	14.9	13.9	12.9	13.0	12.6	12.0	11.4	11.6	11.4	11.5	10.9	11.0	9.9	9.6	9.6	9.4	8.6	7.8	8.3	6.9	7.8	8.5	8.1	7.3					
	Min.	12.4	11.8	11.9	12.7	12.2	12.1	11.4	10.5	10.9	10.8	10.5	9.7	9.1	9.9	8.6	8.6	9.0	8.7	7.8	7.2	6.8	6.2	6.6	7.7	7.0	6.9					

Appendix 9a. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of June, 1984-99.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.																				18.0	18.0	17.0	13.8	13.8	19.1	20.1	18.0	15.9	19.6	20.1
	Min.																				18.0	15.9	12.8	12.8	12.8	11.2	12.8	13.8	14.9	13.8	15.9
1985	Max.																														
	Min.																														
1987	Max.															14.4	15.8	18.5	16.5	19.3	16.8	19.1	19.1	20.7	20.7	17.5	18.0	19.6	18.5	18.1	20.3
	Min.															11.1	11.2	11.2	12.9	10.9	12.4	13.3	12.6	12.3	14.2	14.0	12.2	12.3	12.8	12.9	13.7
1988	Max.																18.3	17.2	14.8	16.5	18.5	18.0	18.1	16.4	17.6	15.9	14.3	14.4	16.8	17.1	14.9
	Min.																12.4	13.7	13.0	12.7	13.9	14.7	14.8	14.3	14.6	14.1	13.3	12.5	14.4	14.5	14.2
1989	Max.																19.2	21.3	18.6	15.8	16.4	19.6	17.9	17.8	21.0	23.1	20.7	23.2	22.7	18.8	21.6
	Min.																11.1	12.4	13.9	14.5	14.3	15.0	15.0	14.2	14.7	17.3	16.9	16.2	18.9	17.0	15.0
1990	Max.															18.0	18.0	17.0	13.8	13.8	19.1	20.1	18.0	15.9	19.6	20.1					
	Min.															18.0	15.9	12.8	12.8	12.8	11.2	12.8	13.8	14.9	13.8	15.9					
1991	Max.									13.4	17.0	17.7	14.8	17.1	14.3	15.9	18.0	19.5	15.0	19.3	21.3	16.9	19.8	22.4	17.5	20.1	22.3	24.4	19.7	14.7	16.0
	Min.									11.2	9.7	12.2	12.4	12.4	11.6	9.9	9.5	10.3	10.9	11.6	13.9	12.0	9.7	11.7	12.6	9.6	11.4	14.9	14.8	12.4	10.2
1992	Max.															19.2	17.4	17.0	13.4	16.4	16.9	20.6	18.0	19.3	20.9	21.5	18.0	16.9	20.5	18.4	20.4
	Min.															18.0	15.3	13.5	9.3	9.9	11.9	12.1	13.7	13.4	14.8	14.8	15.1	14.3	13.9	14.7	11.9
1993	Max.													15.2	19.5	14.6	21.4	22.1	20.0	20.0	20.3	18.3	15.8	11.6	14.4	16.4	15.6	18.0	15.7	15.1	14.6
	Min.													13.2	9.4	11.5	11.4	14.4	15.3	14.4	12.1	12.3	11.9	9.1	8.2	10.9	12.0	12.4	15.1	14.0	13.1
1994	Max.												19.4	20.6	16.5	21.3	17.6	21.4	19.6	20.1	22.4	17.9	21.8	21.5	21.6	21.0	22.0	20.5	17.0	17.8	22.8
	Min.												16.8	13.4	13.9	14.3	15.2	14.1	14.7	11.8	13.4	14.2	13.8	14.5	14.6	13.7	13.4	13.1	13.7	15.1	15.3
1995	Max.												16.5	15.6	15.3	17.3	18.5	17.1	15.9	18.4	18.5	20.1	19.3	22.2	18.8	16.6	18.4	17.8	19.5	19.0	15.8
	Min.												14.2	12.6	13.4	13.9	13.8	13.1	13.6	13.1	12.6	13.4	13.9	14.6	15.4	14.4	11.1	11.4	12.9	12.7	12.1
1996	Max.																				17.2	14.2	15.2	19.0	21.0	22.6	17.8	13.6	20.4	19.6	21.8
	Min.																				13.4	10.9	10.4	10.6	11.1	12.6	13.6	12.6	11.4	12.4	14.2
1997	Max.											18.3	14.4	14.6	15.1	17.9	19.2	17.5	17.9	16.8	19.9	17.4	15.1	13.7	15.6	19.0	17.1	18.0	20.5	21.5	22.5
	Min.											13.7	11.4	11.8	11.5	11.2	11.9	14.9	15.2	13.9	13.7	14.9	13.6	12.4	10.9	8.7	9.8	12.9	13.9	15.4	16.0
1998	Max.											16.5	18.7	20.3	21.6	23.0	22.5	21.8	21.4	21.3	19.3	20.4	22.5	23.0	23.2	23.0	19.5	17.4	19.9	21.1	19.0
	Min.											12.4	10.9	12.4	12.4	13.4	15.0	15.8	16.8	17.1	14.7	11.9	13.7	13.9	15.9	17.0	14.9	11.4	10.4	12.3	15.4
1999	Max.	18.6	18.0	17.0	19.0	20.0	14.1	16.0	17.5	17.8	19.5	21.1	22.5	25.5	19.4	22.8	17.5	16.1	14.4	20.3	21.0	21.8	22.8	21.4	20.1	22.5	20.6	23.3	18.5	17.3	23.9
	Min.	14.6	12.4	14.9	11.4	11.8	12.3	11.6	10.1	10.6	11.6	12.2	14.8	15.5	17.1	16.7	13.6	14.1	12.9	12.0	13.9	14.9	16.2	17.3	15.6	15.4	17.1	15.4	15.9	15.6	16.1

Appendix 9b. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of July, 1984-99.

Year		Date																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	23.2	22.2	21.2	19.1	22.2	20.1	24.3	24.3	24.3	25.3	23.2	25.3	22.2	26.4	23.2	23.2	21.2	24.3	22.2	24.3	26.4	23.2	24.3	22.2	23.2	24.3	24.3	21.2	20.1	25.3	25.3
	Min.	17.5	18.0	15.9	16.5	17.0	18.0	17.0	20.1	21.2	21.2	20.1	20.1	19.1	18.0	19.1	17.0	18.5	18.0	18.0	19.1	19.6	19.6	18.0	18.5	17.0	17.5	18.5	18.5	18.5	17.0	18.0
1985	Max.	17.8	18.8	21.0	21.0	22.1	24.8	21.0	19.4	17.8	20.5	18.8	18.8	21.0	22.1	19.9	17.8	17.8	18.8	18.3	16.7	19.9	19.9	18.8	19.9	19.9	20.5	18.8	21.0	21.0	18.8	21.5
	Min.	11.3	12.4	14.5	15.6	16.1	16.7	17.8	17.8	16.7	16.7	17.8	18.8	17.8	17.8	18.3	17.2	17.2	16.7	16.7	16.7	15.6	16.1	17.2	16.7	16.7	16.7	17.8	17.2	16.7	16.7	16.7
1987	Max.	18.3	22.2	20.8	20.4	18.1	12.8	19.1	25.0	24.6	24.8	22.3	25.9	24.6	25.1	23.7	22.2	23.0	25.5	20.7	24.3	22.0	22.5	23.9	25.5	20.9	17.3	24.5	21.8	24.5	25.6	25.5
	Min.	13.1	12.0	12.0	11.5	13.0	10.0	8.6	14.6	17.5	17.9	16.8	16.3	20.1	20.5	19.7	20.0	18.3	15.8	16.3	13.9	14.3	12.2	12.0	15.6	17.2	15.9	17.9	15.9	16.4	17.1	18.3
1988	Max.	16.5	16.5	16.7	18.4	17.7	19.1	16.9	17.8	16.7	18.7	17.2	18.1	16.7	16.6	17.1	18.0	15.3	18.3	19.9	16.8	19.3	16.0	19.9	19.5	16.5	15.5	17.7	18.1	19.3	21.3	21.5
	Min.	14.6	15.2	16.0	14.6	15.3	15.5	16.1	15.7	15.6	16.1	15.9	16.1	16.2	13.9	14.2	14.9	14.2	14.5	15.4	16.2	14.6	15.4	14.6	15.4	15.5	13.6	13.4	14.6	15.7	16.9	18.0
1989	Max.	19.3	20.1	18.3	22.2	21.3	20.6	18.8	18.1	16.3	19.9	19.3	19.1	19.3	21.2	18.2	21.7	20.8	18.9	22.3	20.8	22.8	19.2	21.2	22.5	19.8	21.4	23.6	23.1	21.1	22.4	23.0
	Min.	14.9	14.3	14.2	13.6	14.6	16.2	16.0	16.2	15.4	15.5	17.8	17.1	16.7	16.7	15.6	15.8	15.9	17.6	17.0	17.2	16.5	16.6	15.2	15.7	17.3	15.6	17.1	18.7	19.9	18.8	17.7
1990	Max.	23.2	22.2	21.2	19.1	22.2	20.1	24.3	24.3	24.3	25.3	23.2	25.3	22.2	26.4	23.2	23.2	21.2	24.3	22.2	24.3	26.4	23.2	24.3	22.2	23.2	24.3	24.3	21.2	20.1	25.3	25.3
	Min.	17.5	18.0	15.9	16.5	17.0	18.0	17.0	20.1	21.2	21.2	20.1	20.1	19.1	18.0	19.1	17.0	18.5	18.0	18.0	19.1	19.6	19.6	18.0	18.5	17.0	17.5	18.5	18.5	18.5	17.0	18.0
1991	Max.	16.4	19.1	18.7	23.0	24.0	20.8	21.7	17.5	21.7	23.4	21.3	24.6	19.2	17.8	23.5	23.0	19.1	19.8	25.0	25.0	20.6	21.3	17.5	24.1	24.1	20.1	20.9	24.5	24.8	25.3	20.2
	Min.	11.2	11.1	10.8	11.8	13.3	14.8	14.1	14.1	13.0	13.9	14.4	14.2	14.5	12.8	14.6	14.8	15.5	15.1	14.6	17.1	14.9	14.1	14.1	15.8	16.5	17.3	16.5	16.1	15.6	15.6	16.1
1992	Max.	16.5	15.6	13.1	13.2	18.2	14.5	12.9	15.9	18.9	16.3	15.3	15.7	16.9	19.1	17.1	18.8	17.1	20.0	17.0	20.2	20.9	20.5	21.2	20.3	22.3	21.4	22.6	19.9	20.5	23.4	23.4
	Min.	13.4	11.6	10.5	9.9	8.4	11.9	11.9	12.6	13.1	13.8	13.1	14.1	13.3	13.9	14.4	14.1	14.3	12.7	14.2	13.7	15.3	16.8	14.4	15.0	15.0	15.1	15.6	15.9	15.8	16.5	17.1
1993	Max.	18.1	19.8	17.5	16.0	15.6	17.0	18.3	17.4	16.8	19.4	18.5	22.1	19.1	19.5	17.5	17.2	17.1	17.1	18.1	21.2	18.0	18.9	17.0	16.4	18.5	20.7	21.2	18.8	22.0	19.9	18.6
	Min.	13.1	13.9	15.0	14.3	13.8	13.1	13.9	15.7	14.6	14.6	16.0	15.8	16.5	15.7	15.3	14.6	15.5	15.1	14.4	14.2	15.8	14.6	15.9	15.3	13.1	14.8	15.1	15.6	16.4	17.6	15.8
1994	Max.	22.1	20.5	23.3	22.0	18.5	20.1	23.1	23.9	19.1	18.4	24.0	26.4	22.8	24.9	20.7	21.8	23.3	21.6	19.9	22.5	20.2	19.4	19.1	18.1	21.2	21.2	20.5	21.0	23.0	24.6	25.1
	Min.	17.3	17.9	16.3	14.8	15.2	14.5	13.9	15.3	16.0	15.6	15.6	15.6	17.7	16.4	16.0	15.6	15.1	15.4	17.0	16.4	17.0	17.1	17.1	15.5	16.5	18.2	19.2	19.0	18.8	16.9	19.5
1995	Max.	14.5	16.1	20.0	21.6	22.0	23.4	25.1	25.9	22.6	20.0	24.9	26.0	21.4	23.5	19.6	17.5	20.8	15.9	14.9	19.4	17.4	20.9	18.8	20.9	22.0	19.6	20.8	22.1	18.4	22.5	20.0
	Min.	12.1	13.6	14.0	13.4	15.7	14.6	15.8	17.4	18.8	17.5	17.8	16.9	17.3	15.4	15.3	12.9	11.5	12.4	11.9	13.4	15.8	14.7	16.3	16.2	16.4	17.6	15.9	15.6	15.4	16.1	17.0
1996	Max.	18.4	15.9	18.5	18.8	18.4	20.1	17.8	19.9	21.1	18.6	18.8	21.9	23.1	20.0	20.0	18.1	18.4	20.1	20.8	20.5	19.7	19.2	19.5	20.4	19.8	23.0	22.2	22.5	19.6	23.1	22.6
	Min.	15.5	14.4	14.4	17.0	17.5	17.1	16.2	14.6	16.4	16.5	16.5	15.4	16.3	16.2	15.2	15.9	15.8	16.1	16.6	17.2	18.4	17.5	16.4	16.4	16.6	17.5	18.4	18.0	17.5	17.0	17.5
1997	Max.	22.5	20.4	23.0	20.0	22.4	21.3	25.3	24.6	24.8	20.8	23.2	22.8	23.1	19.1	21.1	19.6	24.1	25.0	23.3	20.4	22.1	24.6	23.8	22.7	23.1	21.2	17.1	18.1	20.4	23.0	24.1
	Min.	17.7	14.1	16.8	17.9	15.5	15.4	16.3	17.0	18.9	17.2	15.8	16.6	17.0	15.8	12.9	14.6	15.7	17.0	18.0	16.0	15.5	15.2	15.9	15.3	14.7	14.9	14.4	14.9	14.7	13.8	15.4
1998	Max.	18.3	20.6	23.5	19.8	18.3	20.5	22.8	19.4	17.1	16.0	15.4	16.7	20.3	21.7	24.0	24.7	21.5	22.6	23.1	20.1	22.0	22.1	20.4	21.3	23.1	24.1	24.3	25.0	23.8	22.3	21.5
	Min.	14.8	15.1	14.6	16.0	15.8	15.9	16.0	15.4	15.1	12.9	13.9	14.4	14.4	15.3	16.6	18.3	19.9	17.5	17.8	18.5	18.1	18.3	16.8	18.8	16.8	18.6	17.8	19.4	18.9	20.3	19.1
1999	Max.	23.9	22.0	19.7	17.6	19.7	18.9	24.1	22.4	23.7	23.3	22.3	25.8	19.5	23.1	22.7	23.2	22.3	20.7	21.4	19.6	23.9	23.8	21.8	26.8	24.7	21.2	19.7	23.0	21.4	25.5	23.4
	Min.	15.9	17.4	15.8	15.5	14.2	13.9	15.8	17.4	16.1	17.4	17.8	16.9	15.3	14.8	16.9	17.0	18.3	16.8	17.2	15.2	14.4	16.4	17.4	18.0	19.5	18.4	16.6	16.9	18.7	19.1	19.9

Appendix 9c. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of August, 1984-99.

Year		Date																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1984	Max.	23.2	21.2	24.3	26.4	24.3	25.3	26.4	27.4	25.3	25.3	21.2	21.2	19.6	23.2	25.3	24.3	24.3	23.2	20.6	21.2	21.2	22.2	23.8	22.2	21.2	20.1	20.1	20.1	21.7	21.2	20.1
	Min.	18.0	20.1	18.0	17.5	20.1	19.6	20.1	21.2	21.2	14.9	18.5	19.1	17.0	19.6	18.0	17.0	20.1	22.2	19.6	20.1	20.1	18.0	19.1	20.1	18.5	18.0	18.0	19.1	19.1	19.1	19.1
1985	Max.	18.8	17.8	19.4	17.8	21.5	21.0	19.9	21.0	23.1	23.1	24.8	23.1	21.0	19.9	21.0	18.8	19.9	17.8	21.0	18.8	18.8	18.3	17.8	17.8	21.0	22.1	20.5	16.7	14.5	14.5	14.5
	Min.	16.7	14.5	13.5	15.6	14.5	16.7	17.8	16.7	18.8	18.8	19.9	19.9	18.8	17.2	15.6	15.1	15.1	15.6	14.5	15.6	15.6	15.6	15.6	14.5	14.5	15.6	16.1	13.5	13.5	12.9	11.8
1987	Max.	21.9	21.0	19.3	19.3	22.5	22.6	23.8	22.3	23.0	22.7	23.7	18.1	13.8	19.8	18.5	17.7	18.5	18.7	23.8	23.6	20.3	23.3	19.8	19.8	17.8	18.7	19.3	19.5	15.2		
	Min.	18.5	17.8	17.0	15.4	16.5	16.3	14.5	14.3	13.7	15.1	14.8	12.9	10.9	9.7	13.9	13.8	13.0	12.5	14.3	16.4	16.1	14.5	13.6	15.3	12.8	12.3	12.3	11.7	11.8		
1988	Max.	22.2	19.3	21.2	21.2	22.6	19.9	17.4	18.4	20.6	19.4	22.8	21.4	23.7	17.9	19.4	18.8	19.6	15.3	18.4	18.0	19.2	17.9	16.6	19.5	21.1	21.8	19.4	19.6	17.5	18.7	16.9
	Min.	18.0	17.6	16.0	14.6	16.5	15.0	14.4	16.5	17.4	17.6	17.2	15.7	17.9	14.0	11.7	14.5	13.4	13.7	14.3	14.3	14.0	15.8	13.3	13.0	13.2	13.8	13.4	16.7	16.0	16.6	15.9
1989	Max.	24.3	24.5	25.1	24.1	20.7	20.8	19.5	20.0	20.2	21.9	23.1	23.6	20.4	19.1	22.2	22.3	22.7	21.1	21.4	22.5	19.1	20.7	20.3	19.6	18.1	17.3	17.0	16.2	18.8	18.8	16.2
	Min.	16.9	17.0	16.5	16.7	17.3	19.5	19.2	19.5	18.8	17.7	18.8	19.0	19.0	17.7	18.5	19.6	20.1	18.7	16.8	17.2	17.8	18.4	18.9	17.8	16.9	15.6	14.4	14.2	12.9	15.0	15.7
1990	Max.	23.2	21.2	24.3	26.4	24.3	25.3	26.4	27.4	25.3	25.3	21.2	21.2	19.6	23.2	25.3	24.3	24.3	23.2	20.6	21.2	21.2	22.2	23.8	22.2	21.2	20.1	20.1	20.1	21.7	21.2	20.1
	Min.	18.0	20.1	18.0	17.5	20.1	19.6	20.1	21.2	21.2	14.9	18.5	19.1	17.0	19.6	18.0	17.0	20.1	22.2	19.6	20.1	20.1	18.0	19.1	20.1	18.5	18.0	18.0	19.1	19.1	19.1	19.1
1991	Max.	17.6	16.0	14.4	14.9	15.0	18.0	20.0	23.0	22.4	17.6	19.5	23.0	23.5	24.8	21.0	23.7	25.0	24.0	19.0	20.1	17.4	18.6	17.6	20.3	19.7	17.9	21.1	20.9	19.3	17.3	17.1
	Min.	14.9	13.9	11.6	12.1	11.9	12.1	12.3	13.5	12.9	13.9	14.6	15.6	15.8	16.9	17.1	16.0	17.1	18.0	15.1	14.9	15.8	17.1	15.3	12.1	13.1	15.1	12.9	14.4	15.4	15.9	12.9
1992	Max.	20.3	17.5	21.4	18.1	19.4	21.6	22.8	23.0	23.5	23.7	19.2	18.6	22.2	18.1	22.5	22.9	18.0	21.9	19.3	21.4	20.1	18.0	17.5	15.4	17.3	19.3	14.8	15.6			
	Min.	16.0	15.3	12.9	14.4	16.0	16.4	14.5	14.7	15.4	15.3	17.8	16.8	14.7	14.4	14.6	13.9	15.7	15.9	17.9	16.3	17.4	16.1	12.8	13.1	14.6	11.9	12.5	14.5			
1993	Max.	22.5	22.4	20.5	23.3	21.4	23.1	20.8	19.5	20.4	21.9	20.8	20.4	19.9	18.2	19.8	21.0	22.7	22.0	22.1	19.1	18.5	21.0	22.0	19.5	18.7	17.1	18.1	18.9	19.2	18.4	14.8
	Min.	17.5	19.3	18.9	19.0	19.9	18.8	18.0	16.0	14.9	15.7	15.6	17.4	16.1	15.9	15.5	14.2	14.4	15.9	14.9	17.4	17.1	13.6	15.4	16.9	16.3	14.6	12.9	14.1	13.0	12.3	12.1
1994	Max.	22.4	20.6	21.0	23.5	22.0	23.5	22.4	21.6	21.4	23.5	22.4	21.4	21.4	20.7	22.0	22.0	19.5	22.7	22.1	20.0	19.0	18.4	22.2	22.0	22.1	22.9	19.7	21.4	22.4	19.3	19.5
	Min.	19.3	17.1	16.0	17.5	19.2	20.5	20.6	19.8	19.5	18.9	17.9	16.0	17.7	19.7	18.0	15.7	16.5	16.1	15.9	17.3	18.0	17.0	14.6	14.9	15.1	17.4	18.0	18.0	18.8	15.6	13.1
1995	Max.	21.6	20.9	23.2	21.6	23.6	23.2	23.3	24.6	25.4	25.5	25.1	22.6	21.0	22.4	19.0	24.4	20.3	20.9	21.8	22.5	24.9	20.0	15.7	16.6	18.3	16.9	16.1	20.4	17.3	15.1	13.6
	Min.	16.3	13.1	14.1	14.5	14.9	16.1	16.6	16.4	16.8	16.9	18.0	19.6	17.0	14.2	14.5	17.4	15.9	11.9	13.7	15.6	19.3	15.6	13.3	13.5	14.6	15.1	13.8	12.3	13.6	12.7	12.7
1996	Max.	23.3	20.4	21.2	23.5	23.6	26.9	26.8	26.1	21.4	20.6	21.2	24.1	22.4	19.7	22.8	24.1	21.0	23.0	22.0	19.4	22.4	24.5	24.2	20.3	20.5	21.2	22.6	22.0	19.4	18.0	19.0
	Min.	18.0	18.1	18.4	17.9	18.6	18.0	19.2	19.5	18.4	17.9	17.3	18.4	17.2	18.3	17.4	16.8	18.2	18.2	18.8	15.4	14.1	16.4	16.3	17.5	17.2	15.9	15.9	17.5	16.1	15.4	15.6
1997	Max.	19.4	21.5	23.4	21.1	21.1	23.7	24.5	23.1	24.7	23.8	26.3	20.8	19.8	18.0	21.5	18.8	20.5	16.9	15.6	21.8	22.0	18.4	21.8	22.1	21.3	23.5	24.3	19.7	17.5	16.5	17.9
	Min.	16.5	16.4	17.3	17.2	18.0	18.3	15.4	16.0	18.0	17.9	17.6	18.0	16.0	16.3	15.3	16.5	16.5	13.8	12.1	10.2	13.0	14.4	15.4	17.0	17.5	17.3	17.0	17.3	15.1	15.1	13.6
1998	Max.	23.9	23.5	25.5	25.9	25.8	25.2	25.8	24.5	25.7	25.7	26.3	23.9	21.0	23.9	22.5	26.4	23.0	19.7	22.5	22.1	22.4	23.0	22.3	20.3	18.2	17.9	19.5	20.3	18.5	17.0	20.0
	Min.	17.1	17.1	18.3	17.0	17.9	18.2	18.1	18.5	19.1	19.9	20.7	21.1	18.3	15.9	18.0	18.0	17.6	18.6	18.3	17.5	16.8	17.6	16.5	17.5	17.6	17.3	16.5	16.6	16.3	15.6	16.3
1999	Max.	21.1	25.8	25.1	25.4	20.5	21.6	23.4	20.0	22.4	23.5	25.0	19.1	19.9	20.2	21.8	23.0	24.6	20.8	18.8	23.6	20.2	19.3	24.9	22.5	24.6	23.2	22.0	20.5	20.0	17.8	21.9
	Min.	19.2	18.4	17.4	18.0	18.7	17.9	17.5	16.9	16.0	16.1	15.6	17.3	17.5	18.9	18.3	17.0	17.6	18.6	15.1	12.9	15.9	16.3	15.9	15.7	17.3	15.9	17.4	19.3	17.0	14.4	12.4

Appendix 9d. Maximum and minimum water temperatures (°C) measured at the fishway in Northeast River, Placentia for the month of September, 1984-99.

Year		Date																											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1984	Max.	20.1	20.1	18.0	17.0																										
	Min.	19.1	19.1	15.9	15.9																										
1985	Max.	13.5	12.4	13.5	13.5	15.1	14.0																								
	Min.	11.3	10.2	11.3	11.3	12.4	12.9																								
1987	Max.																														
	Min.																														
1988	Max.	20.0																													
	Min.	13.7																													
1989	Max.																														
	Min.																														
1990	Max.	20.1	20.1	18.0	17.0																										
	Min.	19.1	19.1	15.9	15.9																										
1991	Max.	13.4	14.9	19.0	20.4	18.1	19.1	17.5	17.4	16.2	17.5	13.9	13.8	13.9	14.0	16.0	14.3	18.9	15.1												
	Min.	10.7	9.4	11.8	14.2	15.8	16.0	15.5	14.2	11.7	12.3	11.9	11.6	11.4	10.3	10.4	12.6	13.8	11.6												
1992	Max.																														
	Min.																														
1993	Max.	20.8	16.1																												
	Min.	11.6	11.4																												
1994	Max.	16.5																													
	Min.	15.3																													
1995	Max.																														
	Min.																														
1996	Max.	19.5	17.5	18.0	17.1	20.3	18.0																								
	Min.	16.5	16.0	14.5	15.8	15.2	15.4																								
1997	Max.	19.6	18.5	16.5	16.4	18.5	17.0	20.5	17.2	15.3	15.6	17.5	18.5	16.5	17.0	15.9	18.4	15.6	17.5	17.0	18.4	17.0	15.0	14.6	13.8	11.9					
	Min.	13.3	15.9	15.1	15.6	14.5	15.4	16.0	15.4	14.2	13.8	13.6	14.3	15.6	15.3	15.1	13.6	13.9	13.6	15.1	15.9	13.4	12.8	12.6	10.6	10.6					
1998	Max.	21.9	18.8	14.4																											
	Min.	16.0	14.6	13.1																											
1999	Max.	24.5	17.8																												
	Min.	15.4	16.0																												

Appendix 10. Mean daily water levels (cm) measured near the counting fence in Indian Bay Brook, 1997-99.

Month	Day	1997	1998	1999
June	1			
	2			42.0
	3			41.0
	4			41.0
	5			40.7
	6			39.0
	7			38.7
	8			39.0
	9		79.0	37.0
	10		79.0	35.3
	11		76.3	34.3
	12		75.0	32.7
	13		73.8	31.7
	14		71.3	30.3
	15		69.5	30.0
	16		67.8	29.0
	17		65.8	28.0
	18		64.8	27.3
	19		63.0	27.8
	20		62.5	27.0
	21		62.5	26.0
	22		59.8	24.3
	23		58.0	23.0
	24	58.0	56.5	22.3
	25	57.2	56.0	21.0
	26	54.5	54.0	20.3
	27	53.4	53.3	20.0
	28	51.9	52.0	21.7
	29	50.4	49.3	19.7
	30	49.0	48.0	18.0
July	1	48.0	48.3	18.0
	2	46.0	49.3	18.0
	3	45.0	47.7	16.8
	4	44.0	46.3	13.0
	5	42.8	46.0	13.7

Appendix 10 (cont'd)

Month	Day	1997	1998	1999
July	6	43.7	46.0	13.7
	7	41.2	45.3	11.7
	8	38.9	45.0	10.7
	9	37.7	44.3	11.3
	10	37.4	47.0	14.0
	11	38.7	44.3	16.5
	12	38.0	43.3	16.8
	13	36.2	43.0	15.7
	14	35.3	42.0	18.0
	15	35.8	42.7	17.7
	16	34.0	43.3	17.0
	17	33.0	43.3	16.3
	18	33.0	45.0	16.0
	19	34.5	48.7	14.0
	20	34.3	45.3	13.8
	21	33.0	44.0	9.7
	22	32.0	43.0	7.0
	23	31.0	42.7	6.0
	24	29.7	42.0	6.0
	25	30.0	42.0	6.3
	26	28.8	41.7	6.0
	27	27.0	41.0	5.7
	28	26.3	40.3	9.7
	29	27.5	40.0	7.0
	30	27.0	39.0	9.0
	31	26.0	40.0	5.7
August	1	25.0	39.0	6.0
	2	24.2	39.0	3.3
	3	23.0	38.0	5.0
	4	24.0	38.0	4.3
	5	24.6	37.0	3.3
	6	27.7	36.3	4.3
	7	29.2	36.0	1.0
	8	27.3	35.3	8.0
	9	25.3	35.0	3.3
	10	24.2	33.7	4.3
	11	23.3	33.0	3.0
	12	23.2	32.7	1.3

Appendix 10 (cont'd)

Month	Day	1997	1998	1999
August	14	22.5	34.3	0.0
	15	22.0	33.3	0.0
	16	21.3	32.0	0.0
	17	20.8	33.3	17.0
	18	22.2	34.3	18.7
	19	21.3	35.3	12.3
	20	20.5	38.7	12.7
	21	20.0	37.0	11.7
	22	19.9	35.3	11.7
	23	18.8	35.0	11.3
	24	19.3	34.3	10.7
	25	18.5	37.3	11.0
	26	18.7	39.3	11.3
	27	18.7	57.7	13.3
	28	19.3	44.7	12.7
	29	19.2	43.3	14.3
	30	18.2	42.7	17.5
	31	25.8	44.0	
September	1	26.3	47.3	
	2	23.7	46.7	
	3	23.0	46.0	
	4	23.0	46.0	
	5	35.3	46.0	
	6	38.0	70.8	
	7	36.0	68.7	
	8	35.0	68.7	
	9	36.0	74.0	
	10	36.0	81.3	
	11	38.7	87.7	
	12	41.0	90.0	
	13	41.3	94.7	
	14	44.3	92.7	
	15	46.0	91.7	
	16	47.0	91.0	
	17	46.3	99.0	
	18	45.5	97.7	
	19	45.0	94.3	

Appendix 10 (cont'd)

Month	Day	1997	1998	1999
September	20	45.0	95.7	
	21	45.7	92.0	
	22	44.0	92.0	
	23	44.0	96.3	
	24	44.0	96.7	
	25	43.5	90.3	
	26	41.0	90.7	
	27		89.3	
	28	39.0	94.7	
	29	39.0	116.0	
	30	38.0	97.0	
October	1	37.7	91.0	
	2	37.3	91.0	
	3	41.3	95.0	
	4	38.0	93.0	
	5	37.0	94.0	
	6	37.0	94.0	
	7	35.7	103.0	
	8	35.0	92.0	
	9	35.0	92.0	
	10	35.0	91.0	
	11	34.0	89.0	
	12	34.0	88.0	
	13	34.3	88.0	
	14	35.0	89.0	
	15	35.0	89.0	
	16	33.3	86.0	
	17	33.0		
	18	33.7		

Appendix 11. Mean daily water levels (cm) measured near the fishway in Middle Brook, 1983-99.

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
June	2																32.5	33.5
	3																32.0	32.8
	4																31.5	32.7
	5																31.8	33.3
	6														17.3		31.3	34.0
	7														32.0		31.8	34.3
	8														32.5		32.3	33.5
	9						51.5								35.0		33.5	32.8
	10						51.5								34.3		33.2	31.8
	11									35.0						36.5	33.2	30.8
	12							15.5	30.0	36.0				23.0	32.5	36.8	32.3	29.7
	13						55.3	15.3	28.8	37.5			39.0	22.3	31.3	36.0	31.2	28.8
	14						53.5	14.8	27.5	39.3			38.3	23.0	31.2		30.5	28.2
	15		46.5			25.5	52.0	13.7	26.3	39.8		22.8	38.8	26.7	30.2		31.0	27.3
	16		46.9		26.3	25.7	49.0	12.8	25.3	40.0	36.5	22.3	38.8	29.3	29.2	38.0	28.2	26.3
	17		46.2	30.5	24.8	28.8	47.0	11.5	29.0	39.0	38.8	21.5	37.8	28.8	29.2	37.2	29.0	26.0
	18		45.2	31.3	24.5	28.8		11.5	28.3	38.3	40.8	20.8	36.8	28.5	28.3	36.3	27.5	27.3
	19		44.6	30.5	23.3	27.8		14.0	27.7	37.3	41.8	19.7	35.5	28.7	27.0	35.7	26.5	29.5
	20	25.9	42.0	30.0	22.5	27.5	45.0	10.8	28.2	36.3	40.7	20.3	34.0	28.3	28.0	34.8	25.3	29.8
	21	24.9	40.0	30.7	21.5	26.0	43.2	11.2	35.8	35.0	39.8	22.7	33.0	27.3	30.0	33.8	27.3	29.2
	22	23.4	38.0	31.5	20.3	25.8	41.8	12.3	37.8	32.8	39.0	23.8	32.2	26.3	30.8	34.7	27.7	28.3
	23	22.8	36.1	31.0	20.2	24.3	39.3	11.8	38.3	32.0	38.3	23.3	34.0	25.0	29.8	35.3	26.0	27.2
	24	21.0	34.1	29.0	19.7	23.3	37.3	10.8	37.3	30.7	37.2	26.2	34.3	23.0	28.5	36.3	24.5	26.2
	25	20.4	32.5	28.3	18.8	23.3	34.5	10.0	37.8	28.2	36.3	28.5	34.3	23.7	27.0	35.3	22.5	24.5
	26	18.3	31.3	28.0	17.8	21.3		10.5	37.3	26.8	35.5	30.3	33.8	26.7	26.2	34.0	20.4	22.5
	27	16.8	30.3	27.3	17.0	19.5		9.8	36.5	25.7	34.8	31.2	33.8	28.3	29.0	32.0	19.8	22.2
	28	14.9	30.8	26.8	15.8	19.7	30.7	9.0	35.0	24.8	33.2	30.3	33.0	27.3		30.0	20.0	21.7
	29	34.5	29.5	26.0	16.3	17.3	30.5	8.5	33.8	25.0	31.7	31.7	33.5	26.0	28.0	28.0	19.6	21.5
	30	32.3	28.0	31.5	16.2	16.1	34.5	8.3	32.8	26.0	30.3	33.5	33.2	24.8	26.7	26.5	17.8	21.0
July	1	31.0	26.8	31.7	18.2	16.1	36.3	7.9	32.3	24.3	30.8	35.3	32.3	25.5	24.7	24.3	16.8	20.3
	2	30.2	27.7	31.6	21.6	15.9	35.8	7.0	31.0	23.8	33.3	35.3	31.3	25.7	22.3	21.8	17.0	18.5
	3	30.8	27.3	30.8	21.0	14.4	37.3	6.0	29.3	24.3	33.7	34.3	30.0	27.8	21.8	21.8	16.9	16.3
	4	32.1	26.0	30.4	19.2	13.1	38.0	5.3	27.5	23.0	34.2	33.3	27.5	33.8	26.3	22.4	15.7	16.2
	5	31.3	23.9	30.0	20.2	13.0	35.8	6.0	26.3	21.5	34.5	35.3	26.2	33.5	28.8	21.8	15.3	16.5
	6	30.5	22.8	29.1	20.7	10.8	33.3	5.1	25.1	20.3	33.7	36.8	25.3	32.0	30.9	21.2	15.0	16.0
	7	29.6	21.4	27.5	21.3	10.5	31.2	4.3	22.5	22.3	34.5	36.5	26.0	30.5	32.6	19.8	14.3	14.2
	8	35.5	20.0	26.1	20.6	9.8	30.0	3.3	21.7	23.0	33.8	35.3		29.0	30.6	18.8	13.0	13.3
	9	35.3	17.6	27.2	21.7	9.3	28.9	5.0	20.9	22.3	32.6	34.4	24.2	26.7	28.8	18.7	12.0	11.7
	10	34.6	18.4	26.4	26.8	8.3	26.7	4.7	19.8	21.0	32.2	33.8	24.0	24.7	27.8	18.6	12.5	11.0
	11	34.5	19.3	25.8	30.2	7.3	24.9	3.8	19.6	20.0	32.3	34.0	24.9	23.3	29.1	18.4	13.3	11.5
	12	34.3	18.3	25.2	32.2	6.8	24.3	4.5	18.3	20.7	32.5	33.0	23.1	22.0	28.1	17.3	13.5	12.0
	13	33.8	17.3	24.2	34.2	5.8	23.6	4.0	17.5	19.8	31.8	30.9	21.3	21.1	26.4	18.0	13.2	10.8
	14	33.4	17.6	21.5	31.5	4.6	22.8	3.3	16.8	19.0	31.2	29.3	20.3	20.6	25.0	17.6	11.2	9.7
	15	33.1	18.9	20.2	31.9	3.8	21.8	7.0	17.0	19.0	30.3	28.3	19.6	18.9	36.1	18.3	10.3	11.5
	16	33.1	18.1	19.9	32.8	2.8	20.8	9.0	16.4	18.0	30.8	30.5	18.5	19.7	39.7	18.0	10.3	11.3
	17	33.9	19.5	19.9	31.8	1.8	19.8	9.5	15.1	16.5	30.0	34.9	19.5	20.5	41.7	15.7	9.7	10.7
	18	35.3	22.3	22.9	30.8	1.5	18.5	9.5	14.3	15.3	28.8	37.0	19.0	19.0	40.6	15.8	9.3	10.7
	19	34.4	21.3	32.6	30.2	1.8	16.8	9.2	12.8	14.5	29.2	37.0	17.4	17.8	39.1	16.0	10.2	10.5
	20	32.8	20.9	35.7	30.2	1.3	15.5	8.8	16.8	12.2	27.2	35.6	16.5	16.5	37.3	16.0	9.7	9.7
	21	31.7	19.5	39.0	30.0	0.1	14.3	8.4	16.5	10.7	25.5	34.3	16.0	16.3	35.2	15.7	8.8	8.8
	22	30.9	18.3	39.2	28.8	-0.8	13.3	8.2	17.0	12.3	24.7	33.5	16.5	16.6	31.8	14.8	8.3	8.0
	23	30.7	19.3	42.8	25.5	-1.8	12.0	8.0	16.4	13.8	24.0	32.8	19.2	17.1	30.4	14.3	8.2	7.3
	24	30.7	19.0	43.8	24.0	-2.5	10.8	8.0	18.0	12.4	23.2	32.4	26.4	16.9	28.9	13.0	8.0	7.0
	25	29.8	16.9	42.0	22.0	-3.8	10.1	7.3	25.5	11.0	22.0	35.4	28.3	19.5	27.4	11.3	8.0	6.8
	26	31.1	16.8	40.0	20.2	-4.2	9.3	6.7	29.6	9.5	21.0	37.1	31.3	19.3	26.3	10.2	8.0	6.5
	27	32.8	15.5	38.7	19.7	-4.8	8.3	6.1	28.9	8.0	21.0	35.8	30.3	19.1	26.2	9.6	7.3	7.0
	28	32.2	14.3	36.5	17.9	-5.8	7.3	5.6	26.8	7.0	20.5	34.7	29.7	18.9	26.7	9.5	6.3	8.0
	29	32.2	14.8	33.0	16.8	-6.6	7.3	5.0	26.0	6.5	21.0	34.5	28.8	18.1	25.3	9.0	5.3	8.8
	30	32.7	13.5	31.4	17.8	-7.8	6.5	4.8	24.9	5.5	23.2	35.0	27.5	17.8	25.5	8.1	5.0	8.8
	31	33.2	13.5	30.3	17.3	-8.5	5.7	4.3	23.5	4.0	24.3	35.3	26.0	16.1	24.0	7.0	5.0	7.0

Appendix 11(cont'd)

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
August	1	32.8	12.3	28.8	17.0	-9.4	5.2	3.0	21.5	2.8	23.7	38.0	23.8	14.8	23.1	5.4	5.5	6.0
	2	33.1	13.1	29.5	17.5	-9.0	4.2	2.3	20.3	4.5	31.3	43.1	23.0	14.9	22.4	4.0	5.8	6.0
	3	33.5	15.3	31.7	16.3	-9.5	2.5	1.5	19.3	5.8	36.3	43.1	23.8	14.9	21.3	3.9	5.3	5.3
	4	33.9	14.0	32.8	14.8	-13.8	1.8	0.6	18.3	7.5	35.5	41.7	26.2	13.2	20.0	3.7	5.0	4.5
	5	33.7	13.3	29.8	16.6	-11.5	1.8	0.1	17.8	9.0	35.5	39.7	28.8	12.5	18.2	4.3	4.3	4.7
	6	33.1	13.7	28.8	15.5	-12.8	1.3	1.8	16.8	10.0	35.0	43.2	27.5	12.1	16.5	4.8	3.8	3.8
	7	33.7	13.8	31.7	14.0	-13.8	0.7	2.0	15.8	10.8	33.5	43.8	28.8	11.5	14.9	9.0	3.3	3.5
	8	34.3	12.8	30.5	12.7	-15.3	0.8	4.2	14.3	9.8	32.2	43.3	35.4	9.2	13.6	9.5	3.0	4.0
	9	33.3	14.3	29.3	12.0	-17.3	0.2	4.8	12.5	8.5	30.7	42.5	37.0	8.0	11.5	9.1	2.9	4.5
	10	32.9	13.3	28.2	13.0	-20.0	0.8		11.0	7.5	28.0	41.3	36.2	6.8	10.2	9.2	1.8	4.3
	11	34.5	12.3	27.8	13.3	-22.0	2.3	4.4	9.8	6.7	26.3	39.8	35.8	5.8	9.5	9.8	1.3	4.0
	12	35.4	19.7	26.2	13.3	-23.3	1.0	3.4	9.2	8.0	25.2	37.6	34.4	4.8	7.8	9.8	1.0	3.5
	13	35.6	20.2	27.5	12.9	-24.0	-0.5	2.9	8.3	7.0	23.7	35.8	32.0	3.8	9.0	9.0	2.3	3.5
	14	36.6	19.5	28.2	11.8	-31.1	2.0	3.3	7.8	5.4	22.7	33.9	30.1	6.3	8.8	9.1	3.3	3.0
	15	36.7	18.0	27.3	11.0	-26.2	2.7	5.5	9.3	8.8	21.5	32.3	27.0	13.2	8.0		2.8	4.0
	16	39.7	16.8	25.0	9.7	-25.3	1.5	5.0	8.8	4.2	19.7	31.0	26.3	11.5	6.8	7.9	2.0	11.0
	17	40.5	17.3	24.3	9.0	-28.0	-0.5	5.0	7.8	3.8	18.0	30.0	25.5	10.0	5.5	8.0	2.3	17.0
	18	41.5	20.5	23.5	8.2	-30.5	-1.5	4.7	6.8	2.5	17.0	27.8	24.3	9.3	5.2	8.6	2.7	16.3
	19	42.6	25.7	21.3	7.7	-27.3	0.8	4.8	6.2	2.3	17.5	25.8	23.0	8.3	4.2	8.8	3.3	15.7
	20	43.1	26.2	20.3	6.8	-28.0	0.3	4.5	5.8	7.0	18.8	25.5	22.0	6.2	3.3	9.0	11.7	16.0
	21	43.7	26.5	20.2	6.2	-28.2	-0.5	3.2	5.0	12.0	18.0	23.5	22.2	4.7	2.0	8.6	11.3	17.0
	22	47.0	28.2	20.3	5.3	-26.3	-1.2	2.3	3.8	11.8	20.5	21.5	21.0	6.8	1.3	8.1	9.8	18.0
	23	47.1	27.5	20.2	4.3	-26.8	-0.7	2.0	3.0	10.5	22.0	19.5	19.7	5.8	0.8	7.3	11.3	20.0
	24	50.7	26.3	22.3	3.8	-26.2	-2.2	2.3	1.8	9.5	20.8	17.5	18.5	5.8	0.2	6.6	15.0	18.8
	25	51.4	38.5	20.2	3.5	-27.5	-2.7	3.0	1.8	8.8	19.7	16.0	16.3	7.0	-0.7	6.2	13.5	17.8
	26	50.9	47.7	19.0	4.8	-28.3	-3.3	2.8	1.2	8.0	18.7	14.5	14.5	9.5	-1.5	5.2	13.7	17.2
	27	50.3	49.3	19.5	6.0	-29.2	-4.2	2.8	0.3	7.3	17.7	13.5	13.0	12.5	-2.5	4.0	17.0	18.7
	28	50.7	51.0	18.3	6.3	-30.2	-4.8	2.5		5.8	17.0	15.8	11.8	15.0	-3.7	4.3	19.0	19.7
	29	50.8	50.2	17.3	7.5	-31.2	-5.7	1.8	-0.7	4.8		16.8	10.0	13.8	-4.3	3.3	21.7	19.3
	30	49.9	48.3	19.7	8.7	-31.7	-4.7	1.5	-1.7	5.5		16.2	9.0	12.7	-2.8	3.3	25.8	20.7
	31	49.3	46.0			-32.7	-5.7	2.0	-3.0	9.0		15.8	7.7		-2.8	6.3	27.2	22.7
September	1	48.6	44.5			-33.2	-6.7	2.5	-3.8	11.3		15.2			-3.3	9.5	28.8	22.0
	2	50.0	42.5			-33.0	-7.5		-4.0	12.3		15.8			-4.3	9.3	28.3	20.5
	3	51.2	40.5			-32.7			-7.0	12.3		15.0			-5.0	8.3	27.3	19.3
	4	51.5	38.5			-33.7			-3.8	11.3						7.5	26.0	
	5		35.0			-34.3			-4.2	10.3						12.0		
	6		32.3			-34.7			-4.8	9.3						15.8		
	7		31.5			-35.8			-5.7	8.8						18.2		
	8					-35.0			-6.5	12.0						17.8		
	9					-33.5			-7.0	20.3						17.3		
	10					-34.2		4.5	-7.7	20.8						18.3		
	11					-34.8			-7.5	20.3						19.7		
	12					-35.2			-7.7	18.8						20.3		
	13					-35.7				18.7						20.3		
	14					-36.0			-9.0	19.5						22.0		
	15					-35.0				19.5						20.8		
	16					-35.3				18.2						19.8		
	17					-25.0				17.5						18.8		
	18					-22.0				17.7						18.5		
	19									16.5						18.0		
	20									17.8						17.3		
	21															17.5		
	22															19.3		
	23															19.3		
	24															20.3		
	25															21.0		
	26																	
	27																	
	28								-2.7									

Appendix 12. Mean daily water levels (cm) measured near the fishway in Lower Terra Nova River, 1983-99.

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
June	1																93.0	108.0
	2																93.0	111.7
	3														69.0		92.0	106.0
	4														68.0		87.0	106.7
	5																94.0	103.3
	6														68.5		92.0	105.3
	7														69.0		94.0	106.0
	8														65.0		95.0	95.7
	9														68.0		93.0	96.0
	10														66.3		93.0	93.5
	11									73.8					62.0		91.2	91.8
	12								76.0	70.5				70.0	61.0	99.0	92.7	86.7
	13								74.0	70.0			93.0	69.0	61.7	95.0	96.0	85.0
	14							62.0	71.8	70.5		58.0	92.0	66.7	58.8		94.0	82.0
	15							65.5	70.8	69.2	95.0		90.0	72.3	59.0	97.3	92.0	82.0
	16					48.5		64.3		68.0	96.0		88.5	76.7	56.0	96.7	90.0	80.0
	17			54.0		47.5		60.2		66.7	100.0	55.0	88.2	78.3	55.0	93.0	90.0	76.3
	18					45.5		56.5	65.7	63.2	100.0	53.0	84.0	76.0	54.0	91.0	89.8	74.3
	19				48.5	45.7		54.5	62.2	62.2	99.3	52.7	80.0	82.3	55.0	88.0	87.3	74.0
	20	67.2		52.0	47.3	45.8		54.0	63.0	60.0	99.7	56.0	79.0	82.7	53.5	88.3	85.7	76.0
	21	64.3		52.5	45.2	45.8		53.0	81.0	58.0	99.3	54.7	76.0	84.0	58.5	83.0	80.7	76.5
	22	60.9			44.2	44.8		54.0	79.0	56.2	97.7	49.0	74.0	85.0	55.0	81.0	79.4	70.0
	23	61.8		48.0	43.2	44.2		52.7	83.5	55.2	95.3	44.7	86.3	82.3	54.0	80.0	80.0	69.3
	24		66.0	48.2	41.5	43.0		52.0	85.8	53.5	94.0	62.7	82.0	81.7	53.0	78.0	79.0	69.7
	25	57.3	61.5	44.5	41.0	44.7		52.0	87.0	51.8	92.7	60.0	83.0	80.3	52.0	80.0	77.0	65.0
	26	55.9	60.1	40.8	34.7	42.8		50.2	91.0	51.0	87.3	61.3	81.0	82.7	51.0	79.6	74.7	66.3
	27	54.5	56.8	40.0	33.3	41.2	58.0	50.3	93.0	48.0	84.7	61.0	81.3	83.0	53.0	80.4	68.7	65.0
	28	54.9	54.4	39.5	33.2	41.0	54.7	49.3	94.5	47.0	82.3	63.2	78.0	84.3	58.5	77.2	66.7	60.3
	29	54.6	50.1	37.3	32.5	40.2	53.7	50.0	94.0	44.2	78.7	68.0	79.3	76.0	57.7	78.8	66.0	59.3
	30	48.2	48.3	39.0	32.7	40.1	57.0	48.0	91.5	45.7	76.0	67.3	78.1	76.0	56.7	77.8	67.7	59.3
July	1	49.5	44.1	41.8	33.0	40.3	64.8	46.0	89.5	45.0	74.0	77.0	77.0	73.0	56.8	79.0	69.7	60.0
	2	47.0	42.6	37.0	35.5	36.0	67.0	44.9	88.2	42.0	72.0	79.2	72.0	72.7	59.2	76.7	71.0	57.3
	3	43.7	43.5	37.3	29.0	36.0	74.0	44.0	86.8	39.3	73.5	88.0	71.8	74.0	55.5	76.1	70.0	61.0
	4	43.1	41.7		28.0	35.1	75.0	43.6	85.2	24.1	69.7	88.5	68.4	74.7	65.9	76.5	62.4	52.0
	5	44.8	38.1	32.7	30.5	33.2	74.0	43.3	83.0	34.8	69.5	90.5	66.0	72.0	67.1	76.8	62.0	48.0
	6	41.7	36.9	29.5	27.7	32.1	79.3	43.0	81.0	33.8	66.7	93.8	66.3	69.8	74.5	81.7	65.3	48.0
	7	40.0	35.1	28.7	27.4	32.1	78.0	42.0	77.5	31.8	66.0	94.0	60.3	68.0	81.2	78.0	64.2	46.3
	8	47.5	37.4	28.0	27.1	31.3	80.0	42.0	75.8	32.2	66.7	94.7	58.8	64.7	84.7	70.0	63.0	45.8
	9	43.8	38.3	27.0	28.0	32.8	77.3	41.0	74.3	31.8	66.3	95.3	58.0	61.3	87.2	69.7	60.4	45.7
	10	41.6	34.2	26.2	28.4	31.7	76.3	40.8	72.9	31.2	66.2	94.0	57.2	61.0	90.3	69.3	55.0	47.3
	11	40.3	29.0	25.0	27.3	28.5	69.3	40.0	73.2	31.0	66.8	91.8	57.2	60.5	93.6	69.3	57.3	42.7
	12	37.5	26.4	24.3	30.5	28.1	72.8	40.0	69.5	29.8	66.0	88.8	58.7	58.0	93.5	66.8	54.0	40.3
	13	38.5	25.2	23.0	31.0	28.0	72.3	39.5	66.0	26.5	66.0	86.0	51.8	55.7	93.0	59.3	58.0	41.0
	14	35.9	25.5	21.9	29.2	27.6	65.3	39.8	64.5	26.3	65.4	83.0	51.5	56.0	93.0	60.5	58.3	43.7
	15	36.1	20.5	23.5	28.2	27.0	64.3	44.7	61.4	25.5	66.7	81.8	50.8	53.2	104.5	58.5	58.7	47.7
	16	37.1	19.7	16.3	27.2	26.7	59.0	45.2	57.5	24.8	66.6	81.0	49.8	50.7	107.8	56.8	57.1	50.3
	17	38.2	20.7	19.7	25.5	25.5	55.2	44.2	55.8	25.8	65.7	88.0	49.7	49.3	112.0	55.6	54.0	50.0
	18	49.7	21.3	19.8	26.5	24.1	52.2	43.5	53.8	21.0	63.4	87.8	48.0	48.0	115.5	55.5	54.3	43.0
	19	42.2	23.5	41.3	29.4	24.7	48.4	43.3	52.0	20.8	65.5	90.2	45.8	47.7	113.2	54.5	54.7	39.3
	20	34.4	24.5	45.0	28.8	23.3	46.5	46.0	54.3	19.6	65.0	93.0	43.7	49.3	113.2	53.7	53.0	42.3
	21	36.6	20.3	48.8	31.7	22.1	45.3	45.0	51.3	18.6	62.3	92.0	42.5	48.8	111.7	54.0	50.7	44.0
	22	39.1	21.0	55.8	34.8	21.0	42.2	46.6	48.0	20.4	63.0	91.3	46.0	54.3	107.8	48.9	49.7	38.0
	23	38.5	23.0	64.2	30.6	20.0	39.5	45.1	46.3	19.9	62.0	93.1	48.7	58.3	101.5	43.6	52.0	40.7
	24	42.2	23.0	74.4	32.3	19.8	35.6	44.7	47.4	18.8	61.7	90.7	53.0	59.5	96.3	40.8	48.0	39.3
	25	40.4	24.0	79.5	36.3	20.0	33.7	44.8	50.5	16.0	60.3	93.7	66.0	66.3	92.8	46.7	46.3	36.7
	26	42.4	23.4	78.1	30.7	19.9	30.5	45.2	52.0	15.3	59.0	94.7	71.8	70.5	89.2	46.4	47.0	33.0
	27	45.4	20.7	77.0	29.0	19.0	29.2	45.2	48.7	16.5	54.7	94.0	79.3	69.2	86.6	33.4	41.0	34.3
	28	46.3	19.6	72.3	27.5	19.1	28.3	45.0	48.2	15.8	52.3	93.5	83.3	69.2	89.2	37.3	39.3	32.3
	29	48.7	19.6	67.7	25.5	18.5	28.0	43.5	48.5	14.4	57.7	91.3	83.0	74.2	84.3	42.4	42.0	38.3
	30	51.3	19.8	63.7	30.3	17.0	25.1		47.2	11.5	56.5	88.0	85.0	75.8	84.3	39.3	42.0	38.0
	31	54.1	20.7	58.8	28.3	16.8	24.2	43.8	47.5	10.8	54.7	85.3	80.0	74.3	81.7	43.5	40.0	34.7

Appendix 12 (cont'd)

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
August	1	54.3	19.7	54.3	27.5	17.0	22.7	43.0	47.2	12.0	51.0	93.5	79.5	75.0	79.3	39.7	38.7	38.7
	2	58.7	17.2	45.9	30.8	15.3	22.2	42.2	44.3	11.0	63.0	94.5	78.5	73.2	77.9	37.3	37.7	39.0
	3	56.3	20.7	58.0	30.1	15.0	21.5	41.5	45.0	10.5	62.7	95.8	73.2	73.1	75.0	34.2	40.7	36.3
	4	58.7	20.0	53.1	28.9	15.2	19.0	41.0	44.8		65.0	98.3	75.3	73.3	73.7	34.3	37.7	34.0
	5	60.0	19.2	49.3	28.2	14.3	17.7	40.5	42.5	12.1	61.0	97.6	75.9	73.2	71.3	29.8	30.0	33.7
	6	63.0	17.2	46.4	28.5	13.7	15.8	43.2	42.5	10.7	62.7	99.0	75.3	72.2	68.6	36.7	30.0	33.0
	7	61.1	18.0	44.1	26.0	12.5	14.8	41.4	40.5	15.0	67.0	108.3	79.8	69.8	67.3	37.6	29.0	33.3
	8	62.5	17.7	41.5	25.2	12.5	14.0	46.3	39.8	15.0	65.2	110.0	85.2	69.5	64.7	41.8	30.3	33.5
	9	62.5	11.0	40.0	23.9	11.8	13.5	49.3	40.0	15.2	64.7	110.7	88.0	68.7	61.6	37.9	37.3	33.7
	10	64.5	12.5	36.9	23.4	11.5	11.8	43.0	40.0	15.5	64.2	110.5	91.8	65.1	57.2	38.4	42.7	36.7
	11	67.7	14.0	35.4	23.0	11.0	12.7	42.0	38.5	14.8	63.5	107.2	94.0	64.8	53.2	39.1	44.0	35.0
	12	63.9	12.5	32.2	22.5	9.5	12.0	41.5	37.5	15.7	63.3	104.7	93.1	66.3	52.0	39.3	42.0	28.3
	13	67.4	14.6	31.1	22.5	9.0	10.8	41.0	36.7	14.2	62.0	100.0	90.2	60.3	48.3	40.0	28.0	30.3
	14	82.0	15.5	30.3	21.8	9.0	10.2	41.8	34.2	15.5	59.5	94.5	86.7	65.2	46.3	35.3	26.3	27.3
	15	90.6	14.1	28.4	20.3	8.0	8.8	41.5	33.8	13.2	55.7	90.5	88.3	68.3	43.5	32.8	43.7	24.0
	16	94.4	14.7	24.1	19.6	7.7	7.0	41.0	34.0	12.3	55.7	91.0	82.8	74.7	40.4	32.0	42.3	27.0
	17	97.4	19.3	22.5	19.3	7.0	6.2	41.0	31.0	12.5	54.7	88.0	80.5	78.4	39.0	32.2	41.7	46.0
	18	99.5	31.3	21.0	17.8	6.5	5.0	41.0	30.5	14.2	50.3	83.0	76.0	82.4	37.4	37.5	39.7	46.0
	19	96.9	34.9	21.3	17.7	9.3	6.0	40.2	28.5	13.0	50.3	79.3	72.0	91.0	33.4	35.0	40.7	48.8
	20	95.8	40.8	20.3	17.0	6.0	4.5	41.0	29.8	12.0	50.3	78.3	69.0	98.7	29.5	30.0	35.0	49.2
	21	97.8	48.8	18.5	16.0	5.0	3.5	39.5	26.8	16.5	48.7	71.0	67.7	100.0	28.9	30.3	33.7	54.7
	22	107.5	58.7	17.7	15.0	6.0	4.2	38.8	27.8	13.5	46.7	68.7	68.7	97.3	26.7	28.5	30.7	60.0
	23	108.5	64.5	14.5	15.0	5.0	3.8	38.8	29.0	12.5	44.7	66.0	61.7	96.3	24.8	28.0	31.3	62.3
	24	109.7	65.1	20.0	14.3	5.0	3.0	38.5	20.7	10.0	46.7	63.7	61.0	95.4	23.8	28.0	33.0	67.7
	25	115.0	76.6	18.8	14.0	4.2	3.0	40.0	19.0	8.0	43.0	57.7	58.3	95.0	23.0	24.0	36.0	69.3
	26	121.8	95.0	17.7	13.5	3.5	2.0	38.2	18.2	7.7	42.0	60.0	57.5	95.8	22.0	25.0	33.0	78.0
	27	118.3	103.9	15.0	13.5	3.0	1.0	38.2	14.2	11.2	41.0	70.0	55.0	94.2	18.3	24.0	26.0	80.0
	28	116.3	106.8	13.0	13.0	2.0	0.3	38.0	13.0	7.3	40.0	61.0	53.0	92.8	17.7	24.2	26.7	86.3
	29	117.7	99.8	11.0	15.0	1.8	-0.5	37.5	12.2	4.3		64.3	50.0	92.2	16.2	26.0	31.2	87.0
	30	113.2	96.0			1.5	-1.5	37.5	14.0	6.3		65.3	49.8	88.8	23.0	24.0	27.0	87.7
	31	107.3	94.7	32.8		0.0	-2.5	37.0	12.0	11.0		59.5	47.0	85.5	15.8	23.0	28.3	87.3
September	1	102.7	87.1	37.5		1.0	-2.0	36.0	10.5	17.2		57.3	45.3	90.7	14.3	29.0	41.5	85.0
	2	109.3	78.8	42.3		1.5	-1.5		8.5	13.7		57.0			10.0	29.0	39.7	83.7
	3		76.7	47.3		1.7			7.5	17.0		56.0			7.0	28.0	35.3	82.0
	4		76.9	49.5		1.0			6.8	18.2					5.5	28.0	35.3	83.0
	5		72.0	51.5		1.0			7.7	19.0					4.0	39.9	35.0	83.0
	6		69.7	52.0		1.3			9.0	19.0					15.0	57.7	59.3	83.7
	7		72.0			1.0			8.0	18.0						58.0	74.3	79.5
	8		76.1			2.0			7.0	27.2						64.7	72.0	82.3
	9		79.8			2.0			6.3	42.0						71.0	77.3	73.7
	10		85.0			3.0			7.0	44.3						77.0	81.0	75.0
	11					2.0			8.0	40.7						92.3	86.3	
	12					2.0			9.0	44.3						96.0	87.3	
	13					1.5			6.8	47.2						103.0	89.3	
	14					1.2			6.0	50.8						103.3	90.7	
	15					1.0				52.7						103.0	89.7	
	16					3.0				55.0						102.7	90.3	
	17					3.0				57.7						99.3	103.0	
	18									59.2						96.3	101.0	
	19									57.0						93.7		
	20															93.0		
	21															90.3		
	22															88.7		
	23															85.0		
	24															83.3		
	25															82.0		
	26															78.0		
	27																	
	28																	

Appendix 13. Mean daily water levels (cm) measured near the counting fence in Northeast Brook (Trepassey), 1984-99.

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
April	1																
	2																
	3																
	4																
	5																
	6																
	7																
	8																
	9																
	10																
	11																
	12																
	13				32.0											39.0	
	14				32.0											73.0	
	15				32.0				29.0							60.0	
	16				48.0				29.0							52.0	
	17				36.0		34.0		29.0	28.0						39.0	
	18				32.0	28.0	32.0	50.0	26.0	27.0						34.0	
	19				31.0	30.0	38.0	35.0	26.0	27.0						44.0	29.0
	20				38.0	28.0	39.0	29.0	32.0	28.0			35.0	37.0		37.0	28.0
	21				33.0	38.0	38.0	26.0	39.0	28.0		46.0	31.0	32.0		39.0	27.0
	22			40.5	32.0	34.0	37.0	26.0	38.0	33.0	31.0	46.0	30.0	29.0	43.0	40.0	26.0
	23			39.5	31.0	35.0	61.0	28.0	33.0	33.0	30.0	37.0	29.0	27.0	41.0	36.0	25.0
	24			38.5	29.0	34.0	46.0	74.0	51.0	28.0	47.0	34.0	28.0	26.0	38.0	31.0	25.0
	25			38.0	31.0	27.0	38.0	42.0	49.0	26.0	37.0	31.0	27.0	26.0	38.0	47.0	29.0
	26			37.5	32.0	27.0	36.0	31.0	40.0	24.0	30.0	30.0	62.0	27.0	37.0	40.0	28.0
	27			37.0	29.0	26.0	35.0	31.0	35.0	40.0	29.0	29.0	48.0	25.0	31.0	43.0	26.0
	28			36.5	26.0	24.0	34.0	30.0	33.0	44.0	27.0	36.0	35.0	24.0	30.0	42.0	39.0
	29			36.0	25.0	24.0	32.0	29.0	38.0	34.0	37.0	37.0	31.0	25.0	29.0	43.0	75.0
	30			35.0	26.0	23.0	31.0	27.0	28.0	30.0	50.0	32.0	29.0	28.0	29.0	34.0	49.0
May	1			34.5	55.0	33.0	31.0	25.0	26.0	47.0	36.0	29.0	27.0	27.0	41.0	31.0	38.0
	2			34.0	36.0	30.0	31.0	24.0	26.0	48.0	33.0	29.0	26.0	25.0	50.0	29.0	33.0
	3			34.0	31.0	27.0	30.0	24.0	25.0	40.0	59.0	30.0	26.0	24.0	46.0	28.0	30.0
	4			35.0	31.0	64.0	35.0	37.0	34.0	77.0	37.0	29.0	25.0	23.0	43.0	27.0	29.0
	5			34.5	30.0	41.0	33.0	30.0	35.0	46.0	34.0	27.0	24.0	24.0	38.0	39.0	27.0
	6			38.0	27.0	33.0	34.0	27.0	33.0	39.0	31.0	36.0	24.0	45.0	56.0	37.0	26.0
	7			54.0	26.0	30.0	29.0	49.0	30.0	35.0	29.0	47.0	23.0	32.0	44.0	32.0	25.0
	8			45.0	27.0	41.0	26.0	42.0	37.0	33.0	29.0	44.0	23.0	28.0	39.0	29.0	24.0
	9			39.5	51.0	36.0	26.0	33.0	46.0	31.0	27.0	34.0	23.0	27.0	36.0	29.0	24.0
	10			38.0	81.0	30.0	25.0	28.0	36.0	95.0	35.0	41.0	23.0	25.0	41.0	39.0	23.0
	11			35.0	106.0	79.0	24.0	26.0	31.0	50.0	28.0	36.0	23.0	24.0	69.0	34.0	23.0
	12			34.0	44.0	43.0	23.0	26.0	28.0	37.0	27.0	37.0	22.0	44.0	43.0	28.0	23.0
	13			34.0	36.0	33.0	23.0	33.0	27.0	36.0	25.0	32.0	22.0	44.0	35.0	26.0	23.0
	14			32.0	31.0	29.0	23.0	27.0	27.0	31.0	24.0	60.0	21.0	41.0	34.0	25.0	24.0
	15			32.0	29.0	27.0	23.0	25.0	26.0	32.0	24.0	38.0	21.0	32.0	47.0	25.0	24.0
	16		54.0	31.0	28.0	27.0	22.0	24.0	26.0	31.0	24.0	45.0	21.0	50.0	36.0	24.0	23.0
	17		52.5	30.0	28.0	25.0	21.0	24.0	25.0	29.0	25.0	39.0	21.0	36.0	36.0	23.0	22.0
	18		54.0	29.5	32.0	24.0	21.0	24.0	24.0	28.0	26.0	35.0	20.0	30.0	49.0	30.0	21.0
	19		87.0	29.5	28.0	24.0	20.0	23.0	25.0	35.0	28.0	32.0	20.0	28.0	68.0	27.0	21.0
	20			30.0	27.0	23.0	20.0	31.0	25.0	35.0	31.0	30.0	21.0	26.0	47.0	25.0	21.0
	21			40.0	25.0	23.0	20.0	34.0	25.0	31.0	40.0	30.0	20.0	25.0	37.0	24.0	20.0
	22			42.0	24.0	23.0	20.0	29.0	24.0	27.0	38.0	28.0	20.0	28.0	33.0	23.0	25.0
	23		54.0	37.0	25.0	22.0	20.0	26.0	24.0	28.0	47.0	28.0	19.0	27.0	31.0	22.0	31.0
	24		55.0	35.0	27.0	23.0	20.0	27.0	24.0	26.0	51.0	27.0	21.0	26.0	29.0	22.0	30.0
	25			39.0	23.0	23.0	19.0	25.0	26.0	24.0	46.0	25.0	20.0	25.0	32.0	22.0	40.0
	26			41.0	23.0	22.0	20.0	24.0	51.0	24.0	36.0	25.0	20.0	24.0	31.0	22.0	33.0
	27			35.5	22.0	22.0	20.0	23.0	34.0	23.2	32.0	40.0	19.0	23.0	79.0	22.0	59.0
	28			33.0	22.0	22.0	21.0	23.0	30.0	23.0	31.0	35.0	19.0	23.0	43.0	23.0	49.0
	29			33.0	22.0	22.0	31.0	23.0	27.0	28.0	29.0	34.0	19.0	24.0	35.0	23.0	51.0
	30			33.0	22.0	21.0	27.0	22.0	53.0	25.0	26.0	30.0	18.0	23.0	33.0	21.0	38.0
	31		52.0	32.0	22.0	20.0	23.0	37.0	38.0	24.0	28.0	27.0	22.0	31.0	30.0	22.0	32.0

Appendix 13 (cont'd)

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
June	1		49.5	31.5	21.0	19.0	22.0	34.0	32.0	23.0	28.0	27.0	23.0	36.0	44.0	21.0	30.0
	2			31.0	21.0	30.0	23.0	30.0	28.0	24.0	25.0	27.0	21.0	31.0	39.0	74.0	27.0
	3		47.0	31.0	20.0	27.0	49.0	28.0	28.0	24.0	30.0	45.0	20.0	27.0	33.0	44.0	35.0
	4		47.0	43.0	20.0	28.0	41.0	24.0	26.0	23.0	27.0	46.0	22.0	24.0	29.0	34.0	30.0
	5		49.5	37.0	20.0	24.0	31.0	23.0	25.0	22.0	25.0	38.0	22.0	27.0	27.0	34.0	34.0
	6		64.0	35.0	19.0	50.0	30.0	80.0	28.0	21.0	24.0	33.0	20.0	33.0	26.0	29.0	31.0
	7		55.0	36.0	18.0	39.0	34.0	47.0	32.0	22.0	23.0	30.0	19.0	28.0	25.0	28.0	26.0
	8			35.0	22.0	33.0	25.0	40.0	28.0	25.0	46.0	34.0	19.0	26.0	25.0	26.0	47.0
	9			77.0	23.0	27.0	25.0	63.0	26.0	24.0	39.0	37.0	30.0	26.0	24.0	24.0	34.0
	10		105.0	59.0	22.0	25.0	24.0	42.0	24.0	25.0	35.0	33.0	30.0	24.0	23.0	24.0	30.0
	11		69.0	46.0	21.0	60.0	23.0	35.0	23.0	24.0	29.0	29.0	25.0	23.0	24.0	24.0	26.0
	12		60.0	38.0	21.0	38.0	23.0	31.0	23.0	23.0	26.0	31.0	22.0	23.0	23.0	23.0	25.0
	13		54.0	36.5	21.0	31.0	23.0	30.0	23.0	22.0	24.0	25.0	29.0	22.0	22.0	23.0	24.0
	14		51.0	35.0	68.0	32.0	23.0	27.0	23.0	21.0	24.0	25.0	34.0	22.0	23.0	23.0	23.0
	15			34.0	37.0	30.0	21.0	26.0	23.0	21.0	23.0	24.0	30.0	22.0	80.0	21.0	22.0
	16			33.0	33.0	27.0	21.0	26.0	23.0	34.0	23.0	23.0	40.0	22.0	48.0	21.0	22.0
	17		46.0	31.5	29.0	25.0	20.0	33.0	22.0	46.0	22.0	23.0	32.0	22.0	33.0	20.0	22.0
	18		60.5		26.0	24.0	20.0	45.0	21.0	31.0	21.0	22.0	26.0	21.0	30.0	20.0	25.0
	19	38.0	62.0	52.0	24.0	59.0	20.0	35.0	21.0	28.0	21.0	22.0	24.0	20.0	39.0	21.0	30.0
	20	39.0	62.0	43.0	23.0	37.0	40.0	36.0	21.0	26.0	24.0	23.0	24.0	21.0	40.0	21.0	32.0
	21			38.0	23.0	30.0	53.0	40.0	21.0	26.0	23.0	21.0	23.0	20.0	42.0	21.0	27.0
	22			36.0	22.0	30.0	37.0	53.0	21.0	25.0	22.0	21.0	21.0	20.0	33.0	21.0	24.0
	23			37.0	21.0	27.0	29.0	51.0	21.0	23.0	26.0	22.0	21.0	20.0	30.0	20.0	23.0
	24	56.0	46.0	35.0	21.0	27.0	28.0	31.0	20.0	22.0	30.0	22.0	21.0	19.0	29.0	19.0	22.0
	25	59.0	44.5	34.0	20.0	30.0	26.0	35.0	20.0	22.0	32.0	21.0	21.0	19.0	28.0	19.0	22.0
	26		42.0	34.0	20.0	26.0	23.0	44.0	19.0	21.0	27.0	20.0	20.0	19.0	26.0	19.0	22.0
	27	54.0	41.5	23.0	19.0	28.0	40.0	34.0	19.0	25.0	24.0	21.0	20.0	55.0	25.0	19.0	21.0
	28	64.0	40.0	22.0	19.0	30.0	29.0	30.0	19.0	25.0	23.0	20.0	19.0	34.0	25.0	20.0	20.0
	29	57.0	41.0	64.0	24.0	28.0	27.0	29.0	19.0	23.0	22.0	20.0	19.0	28.0	24.0	24.0	21.0
	30	52.0	70.0	45.0	30.0	58.0	24.0	27.0	23.0	22.0	24.0	20.0	19.0	25.0	24.0	27.0	39.0
July	1	47.0	59.0	37.0	26.0	61.0	24.0	40.0	21.0	22.0	53.0	20.0	19.0	24.0	23.0	27.0	47.0
	2	45.0	51.0	32.0	24.0	45.0	23.0	34.0	21.0	24.0	36.0	20.0	19.0	29.0	23.0	16.5	32.0
	3	42.0	47.0	29.0	22.0	36.0	22.0	29.0	20.0	33.0	29.0	20.0	20.0	41.0	22.0	50.0	33.0
	4	41.0	43.0	30.0	21.0	35.0	22.0	28.0	19.0	28.0	25.0	21.0	23.0	36.0	22.0	35.0	25.0
	5	41.0	42.0	27.0	21.0	31.0	21.0	27.0	17.0	24.0	95.0	20.0	22.0	60.0	23.0	30.0	24.0
	6	40.0	40.5	26.0	22.0	33.0	20.0	26.0	16.0	22.0	48.0	20.0	20.0	43.0	29.0	44.0	30.0
	7	40.0	38.5	32.0	21.0	31.0	19.0	26.0	16.0	40.0		20.0	18.0	38.0	24.0	48.0	30.0
	8	40.0	42.0	31.0	20.0	37.0		26.0	17.0	77.0	30.0	19.0	18.0	31.0	22.0	35.0	30.0
	9	40.0	49.0	28.0	19.0	31.0	46.0	24.0	17.0	46.0	32.5	19.0	17.0	28.0	22.0	30.0	30.0
	10	40.0	54.5	26.0	19.0	28.0	40.0	25.0	21.0	35.0	29.0	19.0	16.0	27.0	21.0	75.0	26.0
	11	40.0	49.0	25.0	19.0	61.0	38.0	46.0	20.0	62.0	28.0	19.0	14.0	28.0	22.0	46.0	25.0
	12	39.0	48.0	24.0	19.0	38.0	36.0	34.0	19.0	40.0	25.0	19.0	17.0	26.0	22.0	35.0	25.0
	13	39.0	48.0	23.0	19.0	31.0	34.0	28.0	19.0	34.0	24.0	19.0	20.0	25.0	21.0	32.0	24.0
	14	38.0	47.0	23.0	19.0	43.0	31.0	26.0	19.0	32.0	24.0	19.0	13.0	23.0	21.0	29.0	23.0
	15	36.0	40.0	21.0	19.0	34.0	42.0	25.0	19.0	29.0	30.0	18.0	19.0	43.0	21.0	27.0	41.0
	16	36.0	50.0	22.0	19.0	30.0	39.0	23.0	24.0	28.0	29.0	18.0	17.0	32.0	23.0	26.0	30.0
	17	35.0	48.0	21.0	18.0	28.0	31.0	23.0	21.0	28.0	40.0	47.0	18.0	40.0	20.0	25.0	27.0
	18	54.0	93.0	20.0	18.0	27.0	30.0	26.0	19.0	25.0	31.0	30.0	17.0		20.0	24.0	24.0
	19	42.0	63.0	19.0	18.0	28.0	39.0	24.0	19.0	24.0	29.0	25.0	16.0	29.0	20.0	51.0	24.0
	20	41.0	56.0	27.0	18.0	28.0	33.0	23.0	19.0	37.0	28.0	23.0	12.0	30.0	20.0	35.0	23.0
	21	39.0	49.0	27.0	18.0	28.0	29.0	23.0	19.0	29.0	25.0	24.0	44.0	33.0	20.0	29.0	23.0
	22	36.0	43.0	25.0	17.0	26.0	26.0	23.0	19.0	41.0	24.0	23.0	34.0	35.0	19.0	26.0	22.0
	23	36.0	41.0	31.0	17.0	36.0	25.0	22.0	24.0	36.0	68.0	22.0	29.0	31.0	19.0	25.0	21.0
	24	34.0	46.0	25.0	17.0	30.0	24.0	22.0	21.0	29.0	40.0	22.0	30.0	28.0	19.0	24.0	21.0
	25	38.0	39.5	23.0	17.0	26.0	23.0	27.0	19.0	28.0	47.0	21.0	44.0	27.0	19.0	24.0	21.0
	26	37.0	36.5	22.0	22.0	53.0	22.0	24.0	18.0	26.0	34.0	90.0	31.0	25.0	19.0	34.0	21.0
	27	34.0	34.0	21.0	20.0	41.0	21.0	23.0	19.0	26.0	29.0	46.0	28.0	24.0	19.0	27.0	21.0
	28	33.0	38.0	21.0	19.0	33.0	20.0	21.0	19.0	26.0	27.0	37.0	27.0	24.0	18.0	25.0	22.0
	29	44.0	35.0	21.0	18.0	31.0	23.0	19.0	19.0	46.0	25.0	30.0	24.0	24.0	19.0	24.0	22.0
	30	62.0	37.0	78.0	17.0	28.0	60.0	19.0	18.0	36.0	24.0	27.0	23.0	23.0	20.0	22.0	21.0
	31	58.0	52.0	63.0	16.0	25.0	40.0	18.0	17.0	29.0	24.0	26.0	50.0	22.0	19.0	23.0	20.0

Appendix 13 (cont'd)

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
August	1	43.0	43.0	58.0	16.0	24.0	34.0	18.0	17.0	26.0	25.0	24.0	34.0	22.0	19.0	23.0	20.0
	2	40.0		41.0	18.0	25.0	26.0	20.0	19.0	28.0	27.0	23.0	30.0	22.0	18.0	30.0	20.0
	3	39.0	61.0	41.0	18.0	24.0	24.0	20.0	18.0	44.0	24.0	22.0	26.0	32.0	18.0	25.0	21.0
	4	38.0	48.0	32.0	18.0	23.0	23.0	20.0	18.0	33.0	23.0	24.0	24.0	32.0	19.0	23.0	20.0
	5	37.0	43.0	50.0	19.0	23.0	23.0	19.0	17.0	28.0	23.0	34.0	23.0	26.0	19.0	22.0	20.0
	6	37.0	37.5	37.0	19.0	23.0	23.0	19.0	18.0	38.0	23.0	28.0	22.0	24.0	23.0	21.0	20.0
	7	36.0	37.0	29.0	19.0	22.0	22.0	60.0	18.0	32.0	22.0	26.0	22.0	23.0	58.0	20.0	20.0
	8	35.0	37.0	27.0	18.0	22.0	23.0	37.0	18.0	28.0	24.0	26.0	21.0	22.0	34.0	20.0	20.0
	9	35.0	41.0	25.0	17.0	22.0	23.0	30.0	17.0	26.0	44.0	36.0	21.0	21.0	25.0	20.0	19.0
	10	34.0	38.0	31.0	17.0	22.0	23.0	27.0	15.0	24.0	31.0	78.0	21.0	21.0	26.0	20.0	25.0
	11	34.0	36.0	29.0	17.0	22.0	21.0	23.0	14.0	24.0	26.0	45.0	20.0	23.0	25.0	20.0	22.0
	12	34.0	33.0	26.0	17.0	21.0	21.0	23.0	15.0	23.0	25.0	34.0	20.0	22.0	23.0	19.0	20.0
	13	38.0	33.0	24.0	16.0	21.0	20.0	22.0	30.0	24.0	24.0	30.0	22.0	21.0	21.0	24.0	19.0
	14	44.0	33.0	23.0	16.0	21.0	20.0	34.0	22.0	23.0	23.0	26.0	23.0	21.0	20.0	23.0	19.0
	15	38.0	30.5	23.5	16.0	32.0	21.0	51.0	19.0	22.0	22.0	28.0	21.0	36.0	21.0	21.0	19.0
	16	36.0	30.0	23.0	16.0	25.0	20.0	44.0	19.0	21.0	23.0	27.0	21.0	26.0	20.0	20.0	19.0
	17	33.0	29.5	22.0	16.0	23.0	22.0	36.0	18.0	21.0	22.0	24.0	21.0	23.0	20.0	20.0	20.0
	18	34.0	29.5	21.0	16.0	53.0	22.0	29.0	18.0	22.0	21.0	23.0	21.0	28.0	23.0		19.0
	19	60.0	29.0	21.5	17.0	44.0	20.0	27.0	17.0	22.0	21.0	24.0	20.0	23.0	22.0	22.0	19.0
	20	70.0	28.5	21.0	17.0	33.0	20.0	30.0	17.0	26.0	21.0	24.0	19.0	22.0	20.0	25.0	19.0
	21	55.0	30.5	25.0	16.0	27.0	19.0	27.0	19.0	24.0	21.0	23.0	19.0	21.0	20.0	23.0	18.0
	22	72.0	30.0	22.0	17.0	26.0	46.0	24.0	18.0	22.0	23.0	22.0	24.0	21.0	19.0	21.0	19.0
	23	58.0	50.0	19.0	17.0	24.0	34.0	24.0	20.0	22.0	28.0	24.0	33.0	21.0	18.0	20.0	20.0
	24	43.0	53.0	21.0	28.0	24.0	28.0	23.0	21.0	21.0	25.0	29.0	25.0	21.0	25.0	19.0	20.0
	25	48.0	39.5	20.0	28.0	23.0	42.0	22.0	19.0	20.0	22.0	25.0	25.0	22.0	24.0	29.0	19.0
	26		36.0	21.0	20.0	22.0	36.0	22.0	18.0	20.0	23.0	24.0	44.0	23.0	21.0	85.0	17.0
	27	56.0	31.0	20.0	18.0	22.0	32.0	22.0	17.0	20.0	30.0	23.0	34.0	21.0	21.0	42.0	19.0
	28	50.0	31.0	20.0	17.0	22.0	27.0	21.0	17.0	20.0	25.0	22.0	28.0	20.0	20.0	33.0	18.0
	29	47.0	31.0	30.0	17.0	21.0	25.0	25.0	16.0	25.0	23.0	22.0	25.0	19.0	20.0	29.0	22.0
	30	44.0	36.0	35.0	17.0	21.0	24.0	28.0	15.0	24.0	21.0	24.0	24.0	51.0	31.0	28.0	23.0
	31	43.0	36.0	28.0	16.0	21.0	24.0	26.0	15.0	25.0	21.0	22.0		33.0	52.0	27.0	21.0
September	1	42.0	36.0	24.5	16.0	22.0	40.0	25.0	15.0					26.0	35.0	35.0	20.0
	2	43.0	65.0	23.0	16.0	21.0	31.0	23.0	16.0					24.0	29.0		19.0
	3	44.0	46.0	22.0	18.0	20.0	33.0	23.0	16.0					23.0	25.0		18.0
	4	42.0	39.0	21.0	17.0	20.0	30.0	21.0	14.0					23.0	25.0		18.0
	5	40.0	36.0	21.0	17.0	19.0	25.0	21.0	14.0					22.0	24.0		18.0
	6	40.0	34.5	20.5	17.0	45.0	23.0		15.0						47.0		18.0
	7	54.0	41.5	20.0	16.0	33.0	23.0		14.0						33.0		18.0
	8		37.0	20.0	16.0	27.0	23.0		18.0						29.0		18.0
	9	59.0	46.0		16.0	27.0	23.0		32.0						60.0		18.0
	10	48.0	45.5		16.0	23.0	22.0		25.0								19.0
	11		39.5		16.0	27.0	21.0		23.0								20.0
	12				16.0	35.0			24.0								19.0
	13		45.5		15.0	28.0			22.0								19.0
	14				15.0				21.0								19.0
	15				15.0				20.0								18.0
	16				37.0				19.0								18.0
	17				26.0				18.0								31.0
	18				23.0				32.0								31.0
	19				20.0												35.0
	20				20.0												27.0
	21				19.0												24.0
	22				18.0												22.0
	23				17.0												24.0
	24				18.0												32.0
	25				17.0												26.0
	26				19.0												28.0
	27				19.0												31.0
	28				19.0												
	29				18.0												
	30				18.0												

Appendix 13 (cont'd)

Month	Day	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
October	1				18.0												
	2				34.0												
	3				28.0												
	4				46.0												
	5				34.0												
	6				34.0												
	7				29.0												
	8				27.0												
	9				39.0												
	10				42.0												
	11				32.0												
	12				28.0												
	13				26.0												
	14				25.0												

Appendix 14. Mean daily water levels (cm) measured near the fishway in Northeast River (Placentia), 1983-99.

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
June	1																	
	2																	24.5
	3																	23.7
	4																	21.5
	5																	17.2
	6																	23.8
	7																	20.7
	8																	20.0
	9																	19.7
	10															18.0		
	11									24.0						18.0		18.0
	12									24.0						17.0		17.0
	13									24.7						16.8	27.3	17.0
	14									26.0				32.5		16.8	26.5	17.3
	15					19.0				24.0		16.0		41.3		30.0	25.0	17.0
	16					18.8	25.8	15.7		23.0		16.0	23.0	36.0		28.7	23.5	28.8
	17			23.0		18.5	25.3	14.7		22.2		15.8	22.0	32.0		26.8	20.0	32.3
	18			25.0	28.0	18.0		13.8	33.5	19.3	16.0	14.8	20.8	29.3		18.5	16.5	31.2
	19			24.0	26.7	17.0		19.3	33.0	19.0	16.0	14.4	20.5	29.3		23.7	15.2	28.5
	20	31.0	22.0	25.0	24.7	17.0	30.7	21.7	32.7	19.7	15.0	16.2	20.0	29.7	22.0	39.3	27.0	26.7
	21	31.0	25.5	23.8	23.0	17.0	29.0	21.3		18.7	16.0	15.3	19.0	28.5	22.0	30.3	25.0	26.0
	22	29.3	27.0	23.5	22.8	17.0	26.7	19.7	26.0	17.0	14.0	15.3	18.8	26.7	19.2	28.0	24.7	26.0
	23	28.5	25.0	23.0	22.8	17.0	26.7	18.7	46.0	16.0	14.5	20.2	18.8	25.2	19.0	25.5	23.8	25.5
	24	27.7		22.5	19.2	15.5	30.3	18.0	44.0	16.0	14.0	25.3	18.0	24.0	19.0	25.0	22.3	25.0
	25	33.6	22.5	22.0	22.0	15.5	27.0	17.3	45.7	16.0	14.0	26.8	17.0	22.5	18.2	26.9	18.7	24.8
	26		21.8	21.2	21.3	16.0	25.0	18.7	43.7	15.0	13.0	25.2	16.7	22.3	18.3	24.4	17.0	24.3
	27	27.2	22.0	21.0	20.8	16.0	31.7	19.7	38.3	15.0	13.0	25.0	16.5	21.7	21.2	21.8	19.0	26.7
	28	27.8	22.0	20.8	20.0	16.0	36.7	18.7	33.0	14.0	13.0	23.8	16.0	20.0	20.7	21.8	19.0	28.2
	29	26.4	21.3	20.3	30.7	16.0	40.0	17.7	32.0	14.0	13.0	24.5	15.7	20.0	20.3	21.3	19.0	26.8
	30	24.4		24.6	23.8	15.5		17.0	29.0	16.7	13.0	30.5	16.0	20.0	19.5	19.5	18.0	26.0
July	1	24.2		24.2	22.2	15.5		16.3	28.0	16.0	14.0	38.0	17.0	19.0	21.2	20.0	16.5	25.3
	2		21.0	23.0	21.0	15.0		17.0	26.7	16.0	15.3	31.5	16.8	18.5	35.3	18.8	23.2	23.7
	3		20.3	22.5	22.4	15.0		17.0	25.2	16.0	17.7	28.5	16.8	22.6	54.0	18.1	24.0	23.5
	4	25.1	20.0	22.0	21.9	14.0	43.0	15.8	24.0	15.3	17.0	26.7	18.8	24.4	35.3	15.2	24.0	25.3
	5	23.4	20.0	21.9	20.6	15.0	39.3	14.7	24.0	14.7	16.0	34.5	18.0	23.2	30.7	20.3	23.3	24.3
	6	22.7	20.0	20.8	21.0	17.0	36.0	14.5	19.7	14.0	18.8	32.7	18.0	20.5	35.1	19.7	28.8	23.0
	7	23.1	19.5	20.5	20.4	16.7	36.7	14.7	18.0	13.7	22.0	29.2	17.5	18.9	30.8	18.6	27.0	22.7
	8	30.0	19.3	22.8	18.5	15.7	27.7	20.3	19.0	13.0	28.0	27.2	17.5	18.5	29.3	17.1	25.6	22.3
	9		19.0	26.0	18.4	15.0	34.3	20.7	19.0	13.3	26.7	26.8	17.6	17.5	27.0	17.0	27.7	23.0
	10		18.7	25.5	18.5	14.8	30.7	19.0	18.0	14.0	27.3	25.7	17.0	16.8	26.7	16.5	35.0	23.0
	11	27.5	19.5	24.5	18.0	14.0	28.3	20.3	18.7	14.0	31.0	25.2	15.9	17.0	26.7	16.8	33.0	21.8
	12	27.1	19.0	25.5	18.0	14.0	27.0	22.3	18.0	13.7	29.0	24.0	16.3	17.9	25.0	17.0	31.0	21.7
	13	27.1	18.5	25.0	17.6	14.0	24.0	20.7	17.3	13.0	27.0	22.2	15.7	16.7	23.2	16.5	28.7	27.2
	14	26.7	18.1	24.0	18.0	14.0	22.7	19.0	17.0	13.0	26.0	21.3	15.5	16.1	33.9	16.0	26.3	25.5
	15	26.8	18.1	23.3	18.3	13.5	20.0	21.3	17.0	13.5	24.7	20.7	15.0	15.4	41.0	18.5	26.0	24.7
	16		18.0	23.7	18.4	13.5	20.0	19.3	16.0	14.7	24.0	24.2	15.7	15.8	33.7	19.3	26.7	24.8
	17		18.5	24.0	18.0	13.5	20.0	19.7	14.7	14.7	22.3	25.3	23.6	15.5	35.0	17.2	26.0	24.2
	18	29.9	19.0	30.5	17.4	13.5	20.0	21.3	15.7	14.0	20.7	23.5	22.4	14.2	31.3	16.4	26.0	21.5
	19	28.3	18.5	39.0	17.0	13.5	19.7	19.0	17.0	14.0	21.0	24.5	21.2	14.0	29.2	17.3	34.3	20.3
	20	27.5	18.5	43.5	21.3	13.5	22.0	18.0	15.7	13.3	26.0	23.0	20.2	34.7	29.0	16.8	30.5	19.3
	21	27.1	18.0	42.5	22.6	13.0	21.7	17.7	16.0	13.0	22.7	20.8	19.8	30.0	28.2	16.0	28.3	18.0
	22	25.7	18.0	39.3	20.8	13.0	20.0	18.0	16.0	20.7	20.7	21.3	19.4	29.0	27.0	15.5	28.0	18.0
	23		17.8	34.3	20.0	13.0	19.7	17.0	15.0	18.0	18.7	28.2	19.3	27.5	26.5	15.6	27.3	17.2
	24		18.3	31.1	19.8	12.0	18.7	16.7	15.0	17.7	17.7	26.2	19.8	26.2	25.2	16.0	29.0	16.0
	25	29.6	19.0	28.8	18.8	12.7	18.0	15.3	15.7	17.0	17.7	27.2	20.2	28.5	23.5	15.5	29.7	16.2
	26	31.1	18.5	27.2	18.0	13.0	18.8	15.0	14.0	16.0	15.7	24.5	22.4	27.0	23.0	14.5	30.0	26.8
	27	31.6	18.0	27.0	17.5	15.0	20.7	14.0	14.0	16.0	15.0	23.0	22.1	26.0	22.5	14.8	28.5	26.0
	28	30.5	18.0	25.8	19.2	16.3	18.7	14.0	13.7	17.0	15.0	20.5	21.7	26.2	23.2	14.0	26.5	24.8
	29	29.9	18.5	24.7	18.5	15.0	19.0	15.3	13.5	16.8	18.7	19.2	21.5	24.5	23.0	15.5	25.7	23.7
	30		18.0	24.7	20.7	15.0	19.0	17.0	13.0	15.8	18.0	19.0	21.0	23.2	22.0	15.8	24.7	23.2
	31		17.8	23.8	21.0	15.0	18.7	15.0	11.3	15.0	16.8	19.8	21.0	23.5	21.3	14.6	24.5	23.5

Appendix 14 (cont'd)

Month	Day	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
August	1	29.5	17.5	23.4	19.7	14.0	19.0	15.0	10.5	15.0	16.0	28.0	20.5	22.8	20.2	14.0	25.2	24.7
	2	28.5	17.5	25.9	20.7	14.0	19.0	14.0	11.0	16.0	16.3	29.8	20.2	21.4	20.0	14.0	24.5	23.2
	3	31.8	17.3	26.5	19.8	16.0	19.0	14.0	10.7	16.0	15.8	27.4	19.4	20.3	20.3	13.5	23.7	20.0
	4	30.7	17.5	24.5	19.0	16.0	18.0	13.7	11.0	15.7	15.2	24.2	24.8	19.8	19.7	13.5	23.0	19.3
	5	30.1	17.0	23.3	19.9	15.3	17.7	13.0	10.0	15.0	14.0	22.0	25.7	18.3	19.0	13.2	22.0	19.0
	6		17.0	22.8	19.3	14.0	17.0	13.0	10.0	15.3	16.0	22.7	23.5	17.6	17.2	15.0	20.8	18.7
	7		16.5	22.0	18.3	14.0	16.0	19.0	12.0	15.0	14.7	21.8	22.8	16.5	16.5	15.8	19.8	19.3
	8	28.4	16.5	21.5	18.0	13.0	15.8	23.0	11.7	14.3	13.7	24.0	22.5	16.0	16.5	15.3	19.5	20.0
	9		16.0	21.0	17.5	12.8	15.7	28.3	11.0	14.0	13.0	24.5	24.9	15.1	16.0	14.5	19.0	17.2
	10	28.1	16.0	20.7	19.3	12.5	15.0	30.0	11.0	14.0	13.0	23.0	28.0	14.0	16.0	15.5	18.2	15.5
	11	29.9	16.0	20.8	18.5	12.5	15.0	26.0	10.5	13.5	13.2	21.2	26.7	14.4	26.0	15.2	17.2	17.0
	12	28.4	17.3	21.0	19.1	12.5	14.3	21.7	10.0	14.2	14.0	18.7	25.3	14.0	24.7	14.2	16.8	20.0
	13		22.1	21.0	18.2	12.0	14.0	21.0	12.0	15.0	14.0	17.5	24.3	14.1	23.3	13.8	20.3	19.7
	14		21.5	20.3	17.3	12.0	16.7	22.0	12.0	14.7	14.0	17.0	23.6	17.2	22.7	13.5	20.8	16.2
	15	29.6	19.2	19.8	17.0	12.0	19.0	21.7	23.0	13.8	13.5	19.2	22.0	16.0	27.2	13.8	17.7	16.5
	16	29.4	18.8	19.5	16.8	12.0	18.7	22.0	20.0	13.7	13.0	18.0	22.5	15.3	23.8	14.7	17.3	16.0
	17	36.5	18.0	19.5	16.4	12.0	18.0	22.0	18.8	14.0	13.0	16.5	21.5	15.8	22.5	14.0	16.3	15.5
	18	34.1	19.8	19.0	16.0	12.0	20.7	19.7	18.0	14.0	13.0	16.0	20.5	14.8	23.3	13.8	16.0	17.0
	19	32.3	29.4	18.8	15.8	12.0	19.7	19.0	18.0	14.0	14.7	15.8	19.8	13.2	22.7	13.5	30.3	16.5
	20		28.5	18.5	15.7	12.0	17.7	18.0	17.2	19.3	15.3	15.3	19.5	13.0	21.5	13.5	30.3	15.8
	21		25.7	19.0	15.8	12.0	16.7	18.3	15.0	22.0	14.7	15.0	19.0	12.0	19.5	13.7	24.8	16.0
	22	37.6	23.3	18.5	15.3	11.7	19.3	19.7	14.0	20.0	14.7	15.7	19.3	14.2	18.5	12.0	24.0	15.7
	23	36.1	23.0	19.2	15.0	11.2	19.7	19.0	14.0	19.7	16.0	15.3	22.0	14.0	16.8	12.0	23.8	15.0
	24	34.7	22.5	20.0	14.8	20.0	18.0	20.7	14.0	18.0	15.0	14.8	21.7	14.0	16.5	12.8	22.5	15.0
	25		39.2	19.1	14.8	18.7	17.0	26.7	13.5	18.0	14.3	14.0	20.8	16.8	28.0	12.0	22.8	14.7
	26	33.1	33.3	18.5	14.8	15.3	17.0	26.3	13.0	18.0	14.0	14.2	19.8	20.0	24.5	12.0	34.3	14.2
	27		29.3	18.5	14.0	14.7	17.0	26.0	11.7	17.5	13.0	14.5	18.8	20.0	22.5	12.0	33.3	14.0
	28		27.8	18.0	14.5	14.0	16.7	26.0	10.2	17.0	13.0	14.0	18.3	19.5	19.7	12.0	29.0	13.8
	29	33.7	26.7	19.0	16.0	13.3	16.0	25.3	17.5	17.0		13.5	18.3	18.5	27.8	12.0	25.8	13.0
	30	32.8	26.0	21.8		13.3	16.0	24.7	17.0	16.5		13.5	17.8	16.8	37.7	22.3	26.5	12.2
	31	31.8	25.0	21.7		13.0	20.0	25.0	22.0	16.0		13.2	16.8	22.3		28.0	23.7	11.2
September	1	31.6		23.8		12.8	20.0	27.0		16.3		13.0	16.3	27.0		26.7	21.7	10.0
	2	41.0		25.0		14.2	19.0			16.5		12.8	16.0		24.5	24.8	20.3	
	3			22.8		18.0				16.0		12.5			21.7	22.8	20.0	
	4			21.8		17.0				15.7					21.0	23.8	20.0	
	5			21.0		18.0				15.0					20.8	38.0		
	6			21.5		18.0				15.0					21.0	34.0		
	7					18.0				15.0						29.0		
	8					18.0				20.0						28.0		
	9					18.7				23.3						29.3		
	10					17.0				20.2						38.0		
	11					16.7				20.0						31.5		
	12					14.0				18.0						29.5		
	13					13.0				20.0						27.8		
	14					13.0				19.7						26.0		
	15					15.0				19.0						25.0		
	16					17.5				18.7						24.5		
	17					18.0				18.0						22.8		
	18					28.5				18.0						21.8		
	19									18.0						20.8		
	20															20.0		
	21															19.8		
	22															18.8		
	23															16.8		
	24															16.8		
	25															15.8		
	26															15.0		
	27																	
	28																	